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(ABSTRACTS)

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XXX CONGRESS OF THE SPANISH ANATOMICAL SOCIETY (ABSTRACTS)

GIRONA, 7-9 SEPTEMBER, 2023

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PRESENTATION

Dear colleagues and friends,

The XXXth Congress of the Spanish Society of Anatomy took place in Girona, from the past September 7th to 9th, 2023. The Congress had a total of 125 inscriptions. The total number of scientific communications was 110 (51 oral communications and 59 scientific posters). Many of the autonomous communities in Spain participated in the event. Representatives from Mexico, Portugal, Chile and Switzerland also attended the Congress. Among participants, some anatomical technical staff and medical students were also present during the meeting.

As invited speakers, the Congress counted on the presence of Professor R. Shane Tubbs and Professor Joe Iwanaga from the Tulane University of New Orleans (US), Professor E. de Puelles from the Miguel Hernández University in Alicante (Spain), and Professor M. Zhang from the University of Otago (New Zealand).

Among the different activities where the attendees could assist during the Congress, it took place a Body Donors Gratitude Act and a round table on Ethics Considerations in a Body Donation Program.

The participants could visit Girona, enjoying its amazing Medieval Town, meeting its warm people and knowing its customs. They shared their scientific experiences with other expert colleagues in Anatomy.

On behalf of the local committee and the Spanish Society of Anatomy, we thank to all attendees their participation in the XXXth SAE Congress and we hope to see you in the next Congress of the Spanish Anatomical Society that will take place in the wonderful city of Salamanca in 2025.

Anna Carrera and Francisco Reina

Presidents of the XXX Congress of the SAE

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GENERAL PROGRAM OF THE XXX CONGRESS OF THE "*SOCIEDAD ANATÓMICA ESPAÑOLA*"

Girona, September 7-9, 2023

SE: Social Events

Thursday, 7th September

8:00 – 8:30 h	Reception and Presentation of Credentials (*Aula Magna Modest Prats, Sant Domènec church, Barri Vell Campus, University of Girona*)
8:30 – 10:00 h	Oral Presentations (S1): **GROSS ANATOMY** (*Aula Magna*)
10:00 – 10:30 h	Coffee-break, poster viewing and exhibitors (*Cloister*)
10:30 – 11:00 h	**Opening Ceremony** (*Aula Magna*) SE
11:00 – 12:00 h	Guest Lecturer: **Prof. R. Shane Tubbs** by Tulane University (*Aula Magna*) *"Reverse translational research in anatomy"*
12:00 – 13:30 h	Oral Presentations (S2): NEUROANATOMY (*Aula Magna*)
13:30 – 14:30 h	Lunch (*Cloister*)
14:30 - 15:30 h	Editorial presentations: *Support tools for teaching and learning Anatomy* (*Aula Magna*)
15:30 – 17:00 h	Oral Presentations (S3): CLINICAL ANATOMY I (*Aula Magna*)
17:00 – 18:00 h	Guest Lecturer: **Prof. E. de Puelles** by Universidad Miguel Hernández (*Aula Magna*) *"Desarrollo embrionario de la conectividad habenular"*
18:00 – 19:00 h	Poster Presentation Session (PS) (*Cloister*)
19:00 – 19:30 h	Castellers' Performance by Marrecs de Salt, Girona (*Cloister*) SE
19:30 h	*Afterworks- Cloister Party and Dinner* (*Cloister*) SE

Friday, 8th September

8:30 – 10:00 h	Oral Presentations (S4): EA EMBRYOLOGY, DEVELOPMENT & MISCELLANY (Aula Magna)
10:00 – 10:30 h	Coffee-break, Poster Viewing and Exhibitors (Cloister)
10:30 – 12:00 h	Oral Presentations (S5): TEACHING, EDUCATION AND TECHNIQUES (*Aula Magna*)
12:00 – 12:30 h	Congress Photo; Travel to the Josep Irla Auditorium (*Generalitat de Catalunya, Hospital Square s/n*)

12: 30 – 13:30 h Body Donors Gratitude Act (*Josep Irla Auditorium*) SE

13:30 – 15:00 h Lunch (*Patio de las Magnolias, Generalitat de Catalunya*)

15:00 – 16:30 h Round Table: "Ethics Considerations in a Body Donation Program" (*Josep Irla Auditorium*)

16:30 – 17:00 h Break

17:00 – 18:00 h Guest Lecturer: **Prof. J. Iwanaga** by Tulane University (*Josep Irla Auditorium, Generalitat de Catalunya*) *"Terminologia oroanatomica: a new edition based on current literature"*

18:00 – 20:00 h Guided Visit to Medieval Town SE

21:00 h Congress Official Dinner (Carlemany Hotel, 1 Miquel Santaló Sq, 1, Girona) SE

Saturday, 9th September

9:00 – 10:30 h General Assembly SAE *(Sala de Grados)*

10:30 – 11:00 h Coffee-break, Poster Viewing and Exhibitors (*Cloister*)

11:00 - 12:00 h Guest Lecturer: **Prof. M. Zhang** by University of Otago -Videoconference- (*Aula Magna*) *"Mesoscopic anatomy of the human deep fascia"*

12:00 – 13:30 h Oral Presentations (S6): CLINICAL ANATOMY II (*Aula Magna*)

13:30 – 14:00 h Awards Presentation and Closing of the XXX Congreso de la Sociedad Anatómica Española Girona 2023 (*Aula Magna)* SE

14:00 h Lunch – Farewell (*Cloister*)

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SCIENTIFIC SESSIONS

XXIX CONGRESS OF THE SPANISH ANATOMICAL SOCIETY

SCIENTIFIC SESSIONS

Thursday September 7, 2023

08:30-10:00 Oral Communications (S1): GROSS ANATOMY

Chairs: Arturo Prada, Josep Mª Casadesús

08:30-08:40 DOUBLE INERVATION PATTERN OF THE ANCONEUS MUSCLE AND ITS CLINICAL IMPLICATIONS.

Aragonés P, Jiménez-Díaz V, Valderrama-Canales FJ, Maranillo E, Adrados I, Quinones S, Vázquez-Osorio MT, Sañudo JR.

08:40-08:50 LEFT INFERIOR VENA CAVA: A CASE REPORT AND SYSTEMATIC REVIEW.

Valderrama-Canales FJ, Aragonés Maza P, Elvira López J.

08:50-09:00 QUANTIFICATION AND ANALYSIS OF THE DIFFERENTIAL EXPRESSION OF TWO TYPE I KERATINS AS DETERMINANTS OF NAIL CONSISTENCY.

Mingorance Álvarez E, López Ripado O, Villar Rodríguez J, Pérez Pico AM, Mayordomo R.

09:00-09:10 ANATOMY OF THE POSTEROLATERAL CORNER OF THE KNEE AND ITS STRUCTURES.

Angelats X, Franco M, Reina F, Carrera A.

09:10-09:20 WHAT IS NEW IN FLEXOR TENDON PULLEYS AND THE GAPS BETWEEN THEM IN TRIPHALANGEAL FINGERS OF THE HAND?

Aragonés P, De Las Heras J, Valderrama-Canales FJ , Maranillo-Alcaide E, Quinones S, Adrados I, Vázquez-Osorio MT, Sañudo JR.

09:20-09:30 ANATOMICAL VARIATIONS OF THE FLEXOR DIGITORUM PROFUNDUS AND FLEXOR POLLICIS LONGUS MUSCLES IN THE ORDER OF PRIMATES.

Potau JM, Casado A, Ciurana N, Cabo R, de Paz FJ, Pastor JF.

09:30-09:40 INNERVATION PATTERN OF KNEE JOINT: REVISION AND PRELIMINARY DISSECTION STUDY.

Cateura A, Reina F, San-Millán M, Carrera A.

09:40-09:50 FROM ANATOMY TO PATHOLOGY IN THE THORAX AND ABDOMEN.

Sempere Durá T.

11:00-12:00 Plenary Lecture.

Prof. R. Shane Tubbs: *"Reverse translational research in anatomy"*

12:00-13:30 Oral Communications (S2): NEUROANATOMY

Chairs: Roberto Cabo, Enric Verdú

12:00-12:10 CHRONIC ALCOHOL INTOXICATION INDUCES SOCIAL DOMINANCE AND AGGRESSIVITY BEHAVIOR IN MALE MICE. ALTERED C-FOS AND RELAXIN 3 LEVELS IN BRAIN AREAS CONTRIBUTING TO AGGRESSION.

Zahran MAE, Castillo-Gómez E, Navarro-Sánchez M, Gil-Miravet I, García Mompó C, Olucha-Bordonau FE.

12:10-12:20 IMMUNOLOCALIZATION OF TENTONIN-3 IN HUMAN CUTANEOUS END-ORGAN COMPLEXES.

Cuendias P, García-Mesa Y, Viña E, Cobo R, García-Piqueras J, Vázquez T, Vega JA, García-Suárez O.

12:20-12:30 PROJECTIONS FROM THE NUCLEUS INCERTUS TO THE RETROSPLENIAL CORTEX IN RATS.

Gil-Miravet I, Navarro-Sánchez M, Zahran MA, Mañas Ojeda A, Castillo-Gómez E, Olucha-Bordonau FE.

12:30-12:40 VIDIAN NEURECTOMY BY ENDOSCOPIC DISSECTION FOR TREATING A CASE OF POSTCOITAL UNILATERAL HYDRORHINORRHEA: ANATOMICAL AND PHYSIOLOGICAL BRIEF REVIEW.

Cruz M, Bonet H, Reina F, Gras JR, Tubbs RS, Iwanaga J, Carrera A, Massegur H.

12:40-12:50 SOMATOSTATIN EXPRESSING NEURONS IN THE MEDIAL AMYGDALA REGULATE SOCIAL DOMINANCE BUT NOT AGGRESSIVITY IN MALE MICE.

Castillo-Gómez E, Mañas-Ojeda A, Fortea-Muñoz D, Hidalgo-Cortés J, García-Mompó C, Zahran MA, Olucha-Bordonau FE.

12:50-13:00 THE HUMAN CAROTID BODY MIGHT SENSE ACIDOSIS THROUGHOUT ACID-SENSING ION CHANNELS PRESENT IN GLOMIC CELLS AND NERVES.

Martínez-Barbero G, García-Mesa Y, García-Suárez O, Feito J, Martín-Cruce J, Cuendias P, Vega JA, Cobo T.

13:00-13:10 THE OVEREXPRESSION OF NRG1-TYPE III WORSENS ALS CLINICAL OUTCOME IN hSOD1G93A MOUSE MODEL.

Hernández S, Salvany S, Casanovas A, Piedrafita L, Tarabal O, Blasco A, Gras S, Gatius A, Schwab MH, Calderó J, Esquerda J.

13:10-13:20 THE ROLE OF RELAXIN 3 IN THE RETROSPENIAL CORTEX IN CONTEXT CONDITIONED FEAR.

Navarro-Sánchez M, Gil-Miravet I, Zahran Ebraheem MA, Montero-Caballero D, Hidalgo-Cortes J, Olucha-Bordonau F E.

15:30-17:00 Oral Communications (S3): CLINICAL ANATOMY I

Chairs: Blanca Mompeó, Raquel Mayordomo

15:30-15:40 ANATOMICAL STUDY OF LIVER VASCULARITY TO IMPLEMENT A NOVEL SURGICAL TECHNIQUE.

Albiol MT, Casellas Robert M, Castro Gutiérrez E, Caula Freixa C, Falgueras Verdaguer L, Carrera Burgaya A, Reina de la Torre F, López Ben S.

15:40-15:50 ARTERIAL SUPPLY OF NASAL SEPTUM AND LATERAL WALL VASCULARIZATION.

Massegur H, Gras-Cabrerizo JR, Martel-Martín M, Villatoro-Sologaistoa JC, Reina F, Carrera A.

15:50-16:00 CRICOTIROIDOTOMY, AN OVERCOME CHALLENGE.

Albiol MT, Falgueras L, Lorencio Cardenas C, Noriego Muñoz D, Tornabells Clapera M, Carrera Burgaya A, Reina de la Torre F.

16:00-16:10 KEYS OF SURGICAL ANATOMY IN LEARNING RHINOPLASTY.

Mir N, Carrera A, Massegur H, Reina F.

16:10-16:20 OPEN BOOK PELVIC SIDE WALL: A DYNAMIC TOOL FOR THE SURGICAL DISSECTION OF THE LATERAL PELVIC COMPARTMENT.

Valverde-Navarro AA, García-Granero A, González-Soler EM, Blasco-Serra A, Fletcher-Sanfeliu D, Primo-Romaguera V, Sancho-Muriel J, González-Argenté FX, Martínez-Soriano F.

16:20-16:30 PULMONARY INTERSTITIAL EMPHYSEMA: BAROTRAUMA DIAGNOSTIC CRITERIA IN SCUBA DIVING-RELATED FATALITIES.

Casadesús JM, Fúnez ML, Aguirre F, Reina F.

16:30-16:40 REVIEW OF ANATOMICAL CONCEPTS OF THE RETRORECTAL SPACE AND THE ENDOPELVIC FASCIA: WALDEYER'S FASCIA AND RECTOSACRAL FASCIA.

Gumbau V, Olucha-Bordonau F, Castillo E, Ros F, Coret A, Martínez-Soriano F, Gil-Miravet I, Pastor JC, Roig-Vila JV, García-Armengol J.

16:40-16:50 SYSTEMATIC REVIEW AND META-ANALYSIS OF THE VARIANTS IN PANCREATI-

COBILIARY DUCT JUNCTION AND THEIR CLINICAL IMPLICATIONS IN CANCER.

Orellana-Donoso M, Beas-Gambi A, Matta-Leiva J, Martínez-Hernández D, Bruna-Mejías A, Riveros A,Valenzuela-Fuenzalida JJ, Gutiérrez-Espinoza H.

16:50-17:00 TRANSPALPEBRAL TRANSORBITAL ENDOSCOPIC LATERAL APPROACH TO THE MIDDLE CRANIAL FOSSA: ANATOMICAL STUDY IN CADAVER.

Massegur H, Gras -Cabrerizo JR, Martel-Martín M, Villatoro-Sologaistoa JC, Reina F, Carrera A.

17:00-18:00 Plenary Lecture. ***Prof. E. De Puelles***: *"Desarrollo embrionario de la conectividad habenular"*

18:00-19:00 POSTERS PRESENTATION (4 min each)

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Guerrero Sánchez Y, Escudero Vélez E, Moreno Cascales M.

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P07 MACRO AND MICRO-ANATOMICAL STUDY OF THE PERI-SCIATIC CONNECTIVE TISSUE AT THE SUBGLUTEAL SPACE.

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P08 MORPHOLOGICAL BASIS OF SWEATING IN DIABETIC NEUROPATHY.

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P09 STUDY OF THE ANATOMICAL SAFETY AREA FOR PERIARTICULAR ANALGESIC INFILTRATION THROUGH THE POSTERIOR CAPSULE IN TOTAL KNEE ARTHROPLASTY.

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P10 THE ANATOMY OF THE PIRIFORMIS REVISED – NEW EXPLANATION OF THE PIRIFORMIS AND PELVIC SYNDROME.

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P26 SEX-RELATED VARIATIONS IN HIPPOCAMPAL AKT-EXPRESSION IN THE RAT BRAIN.

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P28 RETINAL GLIOSIS AND ALTERATION OF THE INNER BLOOD-RETINAL BARRIER AS A RESPONSE TO CHRONIC ARTERIAL HYPERTENSION.

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P29 MORPHOLOGICAL ALTERATIONS OF GLIA AND THEIR RELATIONSHIP WITH COGNITIVE ALTERATIONS IN TWO ANIMAL MODELS OF CHRONIC PAIN.

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P30 MEDIPILLS 2.0: CREATION OF ANATOMICAL MICROPILLS COMBINING REAL AND VIRTUAL DISSECTION IN MEDICINE GRADE.

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Pérez-Arana GM, Ribelles-García A, Gracia-Romero M, Bohorquez-Sierra JC, Visiedo-García FM, Prada-Oliveira JA.

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Catalano-Iniesta L, Carretero-Hernández M, Hernández-González D, Benito Garzón L, Blanco EJ, García-Barrado MJ, Carretero J.

P39 POST-COVID EDUCATIONAL INNOVATION IN CRANIAL ANATOMY PRACTICES.

Tallón V, Dalmau M, Espinet EM, Rodríguez R, Olivan M, Acosta S, De Anta JM, Manzanares MC

P40 PROJECT BASED LEARNING: FROM DIAGNOSIS TO SURGERY WITH EMPHASIS IN ANATOMY; AN EFFECTIVE DIDACTIC STRATEGY AS PART OF THE SUBJECT HUMAN ANATOMY III (SPLANCHNOLOGY) IN THE DEGREE OF MEDICINE OF THE UNIVERSITY OF THE BASQUE COUNTRY (UPV/EHU).

Elezgarai I, Egaña-Huguet J, Sarriugarte A, Gutiérrez-Grijalba O, Soto Z, Sarria R, Rico-Barrio I.

P41 SOCIAL NETWORKS AND GAMIFICATION AS A COMPLEMENT TO TEACHING AND LEARNING IN HUMAN ANATOMY.

González-Soler EM, Blasco-Serra A, Higueras-Villar C, Blasco-Ausina MC, Alfosea-Cuadrado GM, Martínez-Bellver S, Pardo-Bellver C, Valverde-Navarro AA.

P42 STUDYING HUMAN ANATOMY BY SIMULATING A TV PROGRAMME.

García-Barrios A, Cisneros AI, Benito J, Whyte J.

P43 TECHNICAL ASPECTS OF PROGRAMMING AN ANATOMY SIMULATOR TO SERVE AS A TEXTBOOK, PRACTICE SUPPORT AND ONLINE LEARNING FOR GRADUATE AND POSTGRADUATE STUDENTS.

Carretero-Hernández M, Blanco EJ, Catalano-Iniesta L, Sañudo JR, Vázquez T, Carretero J.

P44 TECHNOLOGICAL INNOVATION IN ANATOMY PRACTICES: COLLABORATION WITH THE TRAUMA SERVICE AND USE OF AUGMENTED REALITY GLASSES.

Úbeda-Bañón I, Flores-Cuadrado A, Martínez-Marcos A, Saiz-Sánchez D, Villar-Conde S, Astillero-López V, Alonso A, de Arce A, D'oleo A, López A, Martínez AS, González A, Rojas A, Morales C, Reina D, Olmedo E, González JA, Montes J, Muñoz JR, Muñoz JL, Calvo LC, Gómez LA, Aragon M, Mínguez MD, Pascual M, Reoyo M, Rosas ML, Sánchez S, Carrasco VJ, Zorrilla P.

P45 THE DRAMATIZATION IN THE STUDY OF ANATOMY AND HUMAN EMBRYOLOGY CASES AS A STRATEGY FOR COLLABORATIVE AND APPLICATIVE LEARNING. CONSIDERATIONS OF THE MEDICAL STUDENTS.

Mompeó B, Krasucki C.

SECTOR 4

Chairs: Joan C. Vilanova, Guillem Picart

P46 THE USE OF ANATOMICAL DISSECTION VIDEOS IN MEDICAL EDUCATION.

Gimeno Monrós A, Sánchez-Zuriaga D, Alberola Zorrilla P, Zaragozá Colom R.

P47 THE USE OF THE COMPLETE ANATOMY APPLICATION AS A TEACHING TOOL IN DEGREES OF HEALTH SCIENCES.

Madrigal P, Morales-Delgado N, Pombero A, García-López R, Pérez-García C, Puelles E, Andreu-Cervera A.

P48 USE OF 3D PRINTING MODELS IN THE PRACTICAL TEACHING OF ANATOMY: FROM THE CT-SCAN TO THE CLASSROOM.

Pérez-Arana GM, Ribelles-García A, Hernández-Saz J, Gracia Romero M, Díaz Gómez AL, Prada Oliveira JA.

P49 VASCULAR COLOURED LATEX INJECTION AS A FEASIBLE FACILITATOR OF DISSECTION AND DEEPER LEARNING OF ANATOMY OF THE HAND.

Giesenow A, Sánchez Carpio C, Filgueira L, Eppler E.

P50 ANATOMICAL TECHNIQUE. TRAINING AND ASSESSMENT OF COMPETENCES AND SKILLS IN AN OPTIONAL SUBJECT OF THE MEDICINE DEGREE.

Tarro L, Rissech C, Pellicé C, Fernández M, Olivé S, Jové M.

P51 A CONTRIBUTION TO THE MECANOBIOLOGY OF THE HUMAN GENITOURINARY SYSTEM: DISTRIBUTION OF PIEZO MECHANOGATED ION CHANNELS.

García-Mesa Y, Feito J, García-Piqueras J, Sánchez de Rio A, Gago A, Vega JA, García-Suárez O.

P52 CHARACTERIZATION AND IMPROVEMENT OF CALCIUM PHOSPHATE NANOPARTICLES FOR MEDICAL USE.

Doello K, Parra-Torrejón B, Delgado-López JM, Ortiz R, Perazzoli G, Garcés-Robles VJ, Jiménez-Luna C, Melguizo C, Prados J, Quiñonero F.

P53 CORRELATION BETWEEN INTERNAL BONE STRUCTURE AND SOFT TISSUE IN PRIMATES: A PRELIMINARY STUDY IN CHIMPANZEES AND HUMANS.

Casado A, Potau JM.

P54 GASTRIN: A NEW BRANCH OF THE GASTRO-PANCREATIC AXE TO EXPLAIN SLEEVE EFFECT ON GLUCOSE METABOLISM.

Pérez-Arana GM, Ribelles-García A, Gracia-Romero M, Visiedo-García FM, Díaz-Gómez AL, Prada Oliveira JA.

P55 3D GEOMETRIC MORPHOMETRIC STUDY OF THE TEMPOROMANDIBULAR JOINT IN CHIMPANZEES AND HUMANS.

Avià Y, Cuesta-Torralvo E, Carrascal S, Pastor F, Potau JM, Casado A.

P56 PERLIPIN-1 HAS A PROTECTIVE ROLE IN LUNG FIBROSIS: INVOLVEMENT IN THE DIFFERENTIATION OF MYOFIBROBLASTS.

Zaragozá R, Nicolás C, Puebla S, García-Trevijano ER, Viña JR, Ortiz-Zapater E.

P57 RENAL PROTECTIVE EFFECT OF VALSARTAN IN AN EXPERIMENTAL MODEL OF ARTERIAL HYPERTENSION.

González-Marrero I, Morales Cedeño G, Hernández-Abad LG, Carmona Calero EM, Castañeyra-Perdomo A.

P58 ROLE OF CALPAINS IN THE PRO-INFLAMMATORY RESPONSE OF THE MAMMARY GLAND AFTER LACTATION.

Puebla S, Gimeno A, Barber T, Torres L, Viña JR, Zaragozá R, García-Trevijano ER.

P59 THE SUBLINGUA OF LEMUR CATTA, A MORPHOLOGICAL STUDY.

Pastor JF, Muchlinski MN, Potau JN, Casado A, García-Mesa Y, Vega JA, Cabo R.

P60 WHAT WAS A ROMAN LEGIONARY OF 2ND CENTURY CESARAUGUSTA LIKE?.

Cisneros AI, García-Barrios A, Baena S, Obon J, Whyte J.

Friday September 8, 2023

08:30-10:00 Oral Communications (S4) EMBRYOLOGY, DEVELOPMENT & MISCELLANY

Chairs: Olivia García, Alino Martínez

08:30-08:40 RETRO-AORTIC LEFT RENAL VEIN: EMBRYOLOGICAL AND CLINICAL DISCUSSION.

Casals Agustí A, Castro Vaz Pereira LM, Reina F, Carrera A.

08:40-08:50 CONSTRUCTIVE OSTEOLOGY PROJECT.

Tomina L, López E, García F, Dalmau M, Tallón V, Olivan M, Jane E, Ayuso R, Gené M, De Anta JM, Manzanares MC.

08:50-09:00 TISSUE REMODELLING IN THE HUMAN PALATINE RIDGES.

Nebot-Cegarra J, Cueto-González AM.

09:00-09:10 TUMOR MALIGNANCY AS A POSSIBLE RESULT OF THE ACQUISITION OF MARKERS TYPICAL OF TROPHOBLASTIC ONTOGENY: PRELIMINARY IN VITRO AND IN OVO STUDY.

Doello González K, Mesas Hernández C, Quiñonero Muñoz FJ, Melguizo Alonso C, Prados Salazar JC.

09:10-09:20 EVALUATION OF FUNCTIONAL AND ANTHROPOMETRIC VARIABLES POTENTIALLY RELEVANT TO DEVELOP CLINICAL DECISION SUPPORT TOOLS IN CHRONIC PAIN.

Oliver-Pérez A, Baltasar-Bagué A, Verdú E, Esteve E, Boadas-Vaello P.

09:20-09:30 FUNCTIONAL ANATOMY OF THE BIERING-SORENSEN MANOEUVRE: COMPARISON OF MUSCLE ACTIVATION BETWEEN DIFFERENT SURFACES AND POSITIONS.

Alberola-Zorrilla P, Sánchez-Zuriaga D.

09:30-09:40 HAVE MALES MORE PREDISPOSITION TO FORM BONE THAN FEMALES? AN ACETABULAR ANALYSIS.

San-Millán M, Carrera A, Cateura A, Reina F.

09:40-09:50 THE IMMUNOHISTOCHEMICAL PROFILE OF DIGITAL SENSORY CORPUSCLES OF MACACA FASCICULARIS.

Cabo R, Aragona M, García-Mesa Y, Pastor JF, San José I, Germanà A, García-Suárez O, Vega JA.

09:50-10:00 ULTRADOLICHOCRANIUM IN A KNIGHT OF THE ORDER OF CALATRAVA. ZORITA DE LOS CANES CASTLE (GUADALAJARA), 13th - 14th CENTURIES.

Rissech C, Creo O, Revuelta B, Urquijo C, Urbina D, Jové M, Lloveras Ll.

10:30-12:00 Oral Communications (S5): TEACHING, EDUCATION AND TECHNIQUES

Chairs: Alfonso Valverde, Francisco Valderrama

10:30-10:40 COMPARISON BETWEEN FOUR BODY PRESERVATION METHODOLOGIES IN THE ANATOMY LABORATORY: PRELIMINARY RESULTS.

Cateura A, San-Millán M, Carrera A, Asso M, Hidalgo M, Reina F.

10:40 - 10:50 ANALYSIS OF HUMAN ANATOMY TEACHING IN THE TRAINING OF MEDICAL STUDENTS.

Marí-Gorreto J, San-Millán M, Casals Agustí A, Castro Vaz Pereira LM, Reina F, Carrera A.

10:50 - 11:00 FACE-TO-FACE VS. E-LEARNING IN HUMAN ANATOMY: ANALYSIS OF ACADEMIC PERFORMANCE IN BLENDED LEARNING COURSES.

Nebot-Cegarra J, Nebot-Bergua C, Gascón-Bayarri J, Macarulla-Sanz E, Ricart S.

11:00-11:10 FROZEN CADAVERIC TRAINING PROGRAM FOR SURGICAL RESIDENTS.

Castro E, Albiol M, Falgueras L, Casellas M, Caula C, López-Ben S.

11:10-11:20 PERSONALIZATION OF THE LEARNING EXPERIENCE IN HUMAN ANATOMY THROUGH THE ADAPTATION OF QUESTIONS AND CONSIDERATION OF THE STUDENTS' METACOGNITIVE PROFILE TO IMPROVE ACADEMIC PERFORMANCE USING EDUCATIONAL SOFTWARE TOOLS.

Stambuk Castellano M, Carrera A, Reina F.

11:20-11:30 QUANTIFICATION OF THE SUCCESS OF DIFFERENT HUMAN ANATOMY TEACHING TOOLS USING WEB ANALYTICS RESOURCES.

Sánchez-Zuriaga D, Gimeno-Monrós A, Zaragozá-Colom R, Alberola-Zorrilla P.

11:30-11:40 REVIEW OF CLASSROOM PERFORMANCES WITH THE AUDIENCE RESPONSE SYSTEM (ARS): A RETROSPECTIVE LONGITUDINAL STUDY.

González Sequeros O, López González L, López Jiménez JJ, Fernández Alemán JL.

11:40-11:50 ULTRASOUND AS AN EXPLORATORY METHOD OF THE UNGUAL APPARATUS FOR CLINICAL USE.

López Ripado O, Villar Rodríguez J, Mingorance Álvarez E, Pérez Pico AM, Mayordomo R.

15:00-16:30 ROUND TABLE

Ethical Aspects Related to Body Donation to Science

Speakers:

Prof. Richard Shane Tubbs (Professor of Human Anatomy, Tulane University. Editor-in-Chief of the journal Clinical Anatomy).

Dr. Anna Quintanas (Doctor of Philosophy. Department of Philosophy at the University of Girona. Observatory of ethics applied to social, psycho-educational and socio-sanitary action. Ethics and Biosafety Committee, University of Girona).

Dr. Núria Masnou Burrallo (Specialist in Intensive Care Medicine. Donation and transplant coordinator. Master's Degree in Bioethics and Law).

Dr. Francisco J. Valderrama (Professor of Human Anatomy. Complutense University of Madrid. Member of the Drafting Committee of the Madrid Act 2015).

17:00-18:00 Plenary Lecture. *Prof. J. Iwanaga:* *"Terminologia oroanatomica: a new edition based on current literature"*

Saturday, September 9, 2023

11:00-12:00 Plenary Lecture. *Prof. M. Zhang* (videoconference): *"Mesoscopic anatomy of the human deep fascia"*

12:00-13:30 Oral Communications (S6): CLINICAL ANATOMY II

Chairs: Cristina Manzanares, Pere Boadas

12:00-12:10 FOSTERING AUTONOMY SATISFACTION IN ANATOMY EDUCATION THROUGH DRAWING AND GAMIFICATION.

Latre L, Quintas A, Sáez MJ.

12:10-12:20 AN ANATOMICAL STUDY OF MYOCARDIAL BRIDGES.

García-Villanueva M, Huang-Chen J, Mora-Bonillo N, Adrados I, Quinones S, Sañudo JR, Maranillo E.

12:20-12:30 ATHEROMATOSIS BURDEN AND CUMULATIVE TOBACCO CONSUMPTION ARE ASSOCIATED WITH COMMON CAROTID ARTERY DIAMETER REMODELLING IN MIDDLE-AGED ASYMPTOMATIC INDIVIDUALS: THE ILERVAS STUDY.

Bermúdez-López M, Martí-Antonio M, Castro-Boqué E, Cambray S, Farràs C, Barbé F, Lecube A, Mauricio D, Fernández E, Valdivielso JM.

12:30-12:40 IS THE LATERAL ULNAR COLLATERAL LIGAMENT (LUCL) PRIMARILY INVOLVED IN POSTEROLTERAL AND VARUS INSTABILITY OF THE ELBOW? ANATOMO-BIOMECHANICAL STUDY OF THE LATERAL LIGAMENTOUS COMPLEX OF THE ELBOW.

Noriego D, Carrera A, Reina F.

12:40-12:50 PALMARIS PROFUNDUS MUSCLE AND CARPAL TUNNEL SYNDROME. CASE REPORT AND REVIEW OF THE LITERATURE.

Aragonés P, Aranda E, Ortiz A, Sañudo JR.

12:50-13:00 CORRELATION BETWEEN ULTRASOUND AND DISSECTION IN THE IDENTIFICATION OF THE ABDUCTOR POLLICIS LONGUS TENDON VARIABILITY.

San-Millán M, Munné C, Iriarte I, Carrera A, Marí-Gorreto J, Reina F.

13:00-13:10 SENSITIVITY OF THERMOGRAPHY FOR THE CLINICAL DIAGNOSIS APPLIED TO NAIL CONDITIONS.

Villar Rodríguez J, López Ripado O, Mingorance Álvarez E, Pérez Pico AM, Mayordomo Acevedo R.

13:10-13:20 UNDERWATER THERAPY AS A REHABILITATION METHOD IN CHRONIC NEUROLOGICAL PATIENTS.

Domínguez Sanz N, Gamero J, Aguilar P, Ulzurrun N, Aguas A, Sánchez G, Jaúregui L, Santos A, Erkizia H, Carabantes M, Insausti AM.

13:20-13:30 MEASUREMENT OF FINGER STRENGTH IN A UNIVERSITY POPULATION USING THE DEMENA SYSTEM AND ELECTRONIC FORCE SENSORS.

Mayor Serrano Mª M, Flores Funes D, Moreno Cascales M, Fdez-Villacañas Marín M.

ABSTRACTS

XXIX CONGRESS OF THE SPANISH ANATOMICAL SOCIETY

ABSTRACTS

Oral Communications (S1): GROSS ANATOMY

DOUBLE INNERVATION PATTERN OF THE ANCONEUS MUSCLE AND ITS CLINICAL IMPLICATIONS

Aragonés P[1,2], Jiménez-Díaz V[3], Valderrama-Canales FJ[3], Maranillo E[1], Adrados I[1], Quinones S[4], Vázquez-Osorio MT[1], Sañudo JR[1]

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[2] Department of orthopedic surgery and traumatology, Hospital Universitario Santa Cristina, Madrid, Spain
[3] Department of orthopedic surgery and traumatology, Hospital Universitario 12 de Octubre, Madrid, Spain
[4] Department of pathology, Hospital Universitario La Paz, Madrid, Spain

The aim of the present study is to describe in detail the morphology and innervation pattern of anconeous muscle, bearing in mind clinical implications such as iatrogenic injuries during surgical elbow approaches.

A cadaveric study was performed; 56 elbows from 28 formalin fixed cadavers belonging to the Anatomy Department of Universidad Complutense of Madrid were dissected.

The triceps-anconeus nerve was located and dissected. A second innervation to the anconeous muscle from a branch of posterior interosseus nerve (PIN) was occasionally detected. Taking the lateral epicondyle as a landmark, the entry points of both nerves in the muscle were referenced, the triceps-anconeous nerve was referenced at 0°, 30°, 45°, 70° and 90° of elbow flexion, and the PIN branch at 0°.

Anconeus muscle was present in all specimens. The triceps-anconeus nerve was present in all of elbows dissected. A branch from PIN to the anconeous muscle was present in 38 of the 54 elbows (70,4%). There were statistically significant differences in all measurements regarding gender of specimens, being higher for men.

There is evidence of a high frequency of double innervation pattern of anconeus muscle: the main branch of triceps-anconeus muscle depending on radial nerve, which is liable to be damaged during posterior elbow approaches, and a secondary branch depending of PIN.

There are very few references in the literature to this finding and none with such a large sample size.

LEFT INFERIOR VENA CAVA: A CASE REPORT AND SYSTEMATIC REVIEW

Valderrama-Canales FJ[1], Aragonés Maza P[1,2], Elvira López J[3,4]

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[2] Orthopaedic Surgery Department, Santa Cristina University Hospital, SaludMadrid, Spain
[3] Department of Basic Medical Sciences, Faculty of Medicine & Health Sciences, Rovira i Virgili University, Spain
[4] Surgery Department, Joan XXIII University Hospital, Spain

The inferior vena cava (IVC) is mostly a unique and right-sided retroperitoneal vessel that, in the embryonic stages, develops from four pairs of veins. Anatomical variations of the IVC, has been described more than sixty, can be grouped into transpositions, duplications, interruptions, and related-vessels variations, as circumaortic and retroaortic left renal veins due to their conjoint development with the IVC. These variations are rare and unfrequently symptomatic, but they have clinical interest as can cause deep venous thrombosis, bleeding during abdominal surgery or be misinterpreted as lymphadenopathy on imaging.

A case of left IVC (LIVC), identified during routine anatomical dissection, is described to highlight the characteristics and data provided by a systematic review of the literature on the LIVC. Relevant research on the topic was retrieved, both from dissection and imaging, including series, small case series and case reports.

The prevalence of LIVC is about 0.1–0.4%; together with this condition, frequently there are documented variations in the course and tributaries of the IVC.

Clinically, LIVC can have relevant implications: the potential for misdiagnosis on imaging; technical difficulties during retroperitoneal surgery (i.e., abdominal aortic aneurysm repair, or live donor nephrectomy); and their significance in relation to the etiology and management of deep venous thromboembolism.

In conclusion, this case report highlights the importance of recognizing anatomical variations such as LIVC. Radiologists, surgeons, and other healthcare professionals should be aware of these rare variants to ensure accurate diagnosis, appropriate treatment planning, and safe clinical management.

QUANTIFICATION AND ANALYSIS OF THE DIFFERENTIAL EXPRESSION OF TWO TYPE I KERATINS AS DETERMINANTS OF NAIL CONSISTENCY

Mingorance Álvarez E[1], López Ripado O[2], Villar Rodríguez J[3], Pérez Pico AM[4], Mayordomo R[2]

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[3] Dept. Nursing, Physiotherapy and Occupational Therapy, Faculty of Health Sciences, University of Castilla la Mancha, Spain

[4] Dept. Nursing, University Centre of Plasencia, University of Extremadura, Spain

Nail consistency is a recent term that has not been extensively studied. However, we consider that it could play a significant role as an indicator of potential nail and systemic pathologies. There are many factors that can affect the determination of nail consistency, including the anatomy of the nail apparatus, the structure of the nail plate, and the type and quantity of keratins present.

To analyse the relationship between nail consistency and type I keratin expression, a sample of 32 individuals (18 with hard consistency nails and 14 with soft consistency nails) within the same age group (49.94 ± 3.38 years) were chosen. Immunoblotting analysis was performed using two buffers with different concentrations of a reducing agent (50 and 200mM) and two specific antibodies against type I keratins.

At 50mM, the mean extracted protein concentration was significantly higher than at 200mM (p-value<0.001). The expression level obtained with the AE13 antibody was not related with gender and nail consistency (p-value≥0.942). With the cytokeratin 17 antibody (CTK17), no differences were found by gender (p-value=0.341). However, significant differences were established between hard-consistency and soft-consistency nails (p-values≤0.007) for the two concentrations, and between concentrations for soft consistency nails (p-value=0.001). Hard-consistency nails had a higher expression level of keratine17. This study provides further evidence to support previous research on the elemental composition and biomechanics analysis of the nail plate. By analysing the expression of type I keratins, it was shown that nail consistency could be influenced by the type and quantity of keratins present.

ANATOMY OF THE POSTEROLATERAL CORNER OF THE KNEE AND ITS STRUCTURES

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[2] *Servicio de Cirugía Ortopédica y Traumatología, Hospital Universitario 12 de Octubre, Madrid, Spain*

The posterolateral corner of the knee is an anatomical entity that, despite being studied, remains largely misunderstood. There are many gaps in knowledge about the anatomy, histology, prevalence, biomechanical function and anatomical variants of most of the structures that compose it. In addition, there is a large lack of consensus and unanimity regarding the terminology and nomenclature that should be used to refer to each of these structures, which only increases the confusion and lack of knowledge of this anatomical entity.

This is the reason why we have done a review that summarizes the research done over the last 100 years in an attempt to synthesize and bring order to the knowledge of the posterolateral corner of the knee. Thanks to this review we were able to observe that the discrepancies and unknowns regarding these structures were a fact.

Two of the structures in which we found the most discrepancy and lacks of knowledge were the fascicles and attachments of the popliteus tendon and the meniscofibular ligament.

We have started a macro and microanatomical study of this structures, using the macro/micro dissection of the posterolateral angle of the knee and performing semi-thin sections and using the E12 plastination technique.

Our preliminary results show that there is an important anatomical variability in different structures of this region of the knee. It is necessary a clear systematization of these structures to understand the pathology and to improve the treatment of lesions that are focused on the posterolateral corner of the knee.

WHAT IS NEW IN FLEXOR TENDON PULLEYS AND THE GAPS BETWEEN THEM IN TRIPHALANGEAL FINGERS OF THE HAND?

Aragonés P[1,2], De Las Heras J[3], Valderrama-Canales FJ [1], Maranillo-Alcaide E[1], Quinones S[4], Adrados I[1], Vázquez-Osorio MT[1], Sañudo JR[1]

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The flexor tendon pulleys in the fingers of the hand are fibrous structures of variable size, shape and thickness that cover the synovial sheath of these tendons. Despite their clinical relevance, their arrangement and configuration in each of the triphalangeal fingers have been little studied and with small sample sizes.

192 triphalangeal fingers belonging to 48 fresh body donors hands were dissected. Multivariate analysis was carried out.

Twenty-five cases (52%) were left hands, and 26 of the 48 hands belonged to female donors (54.2%). The results were analyzed by fingers for each of the 5 annular pulleys, the 3 cruciform pulleys and the gaps between them. In addition, the most and least frequent configurations of the pulleys in each of the fingers were studied, observing that the classic pattern with all the pulleys appeared only in 3 fingers (1.56%), while the most frequent pattern was A1-A2-C1-A3-A4, which was seen in 35 fingers (18.22%).

The flexor pulleys in the triphalangeal fingers of the hand have shown enormous variability in arrangement and shape, and also rarely appear all in the same finger. This peculiar anatomical arrangement should be known by the different professionals who perform their clinical work in this anatomical area.

ANATOMICAL VARIATIONS OF THE FLEXOR DIGITORUM PROFUNDUS AND FLEXOR POLLICIS LONGUS MUSCLES IN THE ORDER OF PRIMATES

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[3] Departament of Morphology and Cellular Biology, University of Oviedo Spain
[4] Department of Anatomy and Radiology, Faculty of Medicine, University of Valladolid, Spain

The ventral muscles of the forearm have a relatively conservative conformation from an evolutionary and anatomical point of view in the order of primates. The exception is found in the layer formed by the deep flexor muscles of the fingers, which presents a high degree of variability among different primate species, especially with regard to the presence of a tendon for the thumb. Non-hominoid primates usually have a well-developed tendon for the thumb arising from the common tendon that runs to the triphalangeal fingers. The anatomical characteristics of this tendon, however, depend on the type of locomotion that these species present. In hominoid primates, the degree of variability of this muscular layer is more evident, existing great anatomical differences both between different species and within the same species. Among these differences are the division of the flexor digitorum profundus muscle into a radial and ulnar head, the absence of a differentiated tendon for the thumb, the presence of a vestigial tendon for the thumb, the presence of a common tendon for the thumb and second digit or the presence of a flexor pollicis longus muscle differentiated from the flexor digitorum profundus muscle. This last anatomical characteristic is exclusive to modern humans and is part of the changes suffered in the anatomy of the hand in *Homo sapiens* in order to increase the degree of specialization of the forelimb in manipulative tasks as a consequence of the loss of locomotor functions related to the appearance of bipedalism 7 million years ago.

This work was supported by the Ministerio de Economía y Competitividad of Spain (grant number CGL2014-52611-C2-2-P to JMP), the European Union (FEDER) (grant number CGL2014-52611-C2-2-P to JMP) and by the Ajudes Predoctorals of the University of Barcelona (grant number APIF-UB 2016/2017 to AC).

INNERVATION PATTERN OF KNEE JOINT: REVISION AND PRELIMINARY DISSECTION STUDY

Cateura A [1, 2], Reina F [1], San-Millán M [1, 2], Carrera A [1]

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Among the different therapeutic options available for treating the chronic pain of the knee joint, nervous ablation techniques rely on the specific location of the branches responsible for the sensitivity of that joint, denoted in generic terms as genicular nerves.

There is mild consensus on the specific location around the knee of these genicular nerves. Moreover, the point of origin of these nerves is not well known. The majority of the authors agree in the location of the main branches of femoral nerve, sciatic and obturator nerve. But, few studies describe the precise anatomy, origin and trajectory of these genicular branches. There is a discrepancy among authors regarding not only the precise branches that these nerves emit to accomplish the joint innervation, but also regarding the specific areas within the joint where these branches are distributed.

This study presents a bibliographic review with the aim of precisely identifying the pattern of the anatomic innervation of the knee joint, defining their nerves of origin, the location of their topographical paths and their areas of distribution.

Moreover, a preliminary study based on the microanatomical dissection of the innervation patterns of the knee joint and the anatomical description of such innervation is provided. These preliminary results show that the muscular branches of the femoral nerve and the saphenous nerve are responsible of the innervation of the lateral, anterior and medial aspects of the knee. Articular branches from the sciatic nerve were not found.

FROM ANATOMY TO PATHOLOGY IN THE THORAX AND ABDOMEN

Sempere Durá T

Universidad Rovira i Virgili, Radiólogo del Pius Hospital de Valls (Tarragona), Spain

To understand the pathological alterations of diagnostic imaging it is necessary to start from a

good anatomical knowledge of each region, this will allow us to differentiate normality and pathology, based on morphological changes.

An atlas is presented with plentiful iconography that combines, simultaneously, the anatomical and pathological image so that the student can see the morphological changes generated by the pathology with respect to anatomy.

Conventional radiography and mainly computed tomography have been included, matching the axial, coronal or sagittal section of both the radiological anatomy and the pathology. There are also a large number of cases that incorporate three-dimensional anatomy and pathology through the Volume Rendering technique.

This atlas specifically includes the study of the anatomy and pathology of the thoracic and abdominal regions, compiling:

Lung and airway (77 cases), mediastinum (29 cases), hilium of lung (5), pleura (27), heart (37 cases) and great vessels (48 cases), chest wall (28 cases), diaphragm (20) and breast (12).

Abdominal wall (27 cases), gastrointestinal tract (124 cases), liver (63 cases), spleen (25 cases), pancreas (29 cases), biliary system (28 cases), peritoneum (37 cases), retroperitoneum (38 cases), large abdominal vessels (36 cases), kidney (94 cases) and urinary tract (80 cases), male and female pelvis (81 cases).

This Atlas is a useful tool for teachers of Anatomy, Radiology and Clinical disciplines to use it with students of Medicine, MIR and continuing education.

Oral Communications (S2): NEUROANATOMY

CHRONIC ALCOHOL INTOXICATION INDUCES SOCIAL DOMINANCE AND AGGRESSIVITY BEHAVIOR IN MALE MICE. ALTERED C-FOS AND RELAXIN 3 LEVELS IN BRAIN AREAS CONTRIBUTING TO AGGRESSION

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It has been reported in humans that alcohol abuse leads to an alteration of social behavior including aggressivity. Nevertheless, the underlying neuroanatomic mechanism of this connection remains elusive. On the other hand, it was shown that nucleus incertus and its neuropeptide Relaxin 3 contribute to alcohol addiction and relapse. Moreover, Relaxin3 and its receptor RXFP3 plays a role in the modulation of the behavioral state and are involved in arousal, stress responses and affective state. In this study, we have investigated sex specific behavioral alteration after chronic alcohol intoxication considering accompanied neuronal activity changes and relaxin3 levels. Surprisingly, only male mice showed increased aggressive and dominant behavior after chronic alcohol intoxication at 48hr but not 7 days after alcohol treatment withdrawal. This transient increase was accompanied with significant lower levels of c-fos in alcohol treated males compared to saline treated males in brain regions that contribute to aggression behavior (medial septum, lateral septum, medial amygdala, and bed nucleus of stria terminalis). Besides, those levels were restored at 7 days of treatment withdrawal. Interestingly, Relaxin3 levels showed an upregulation in alcohol treated males compared to saline treated males (medial septum, lateral septum, medial amygdala, and anterior cingulate cortex) at 7 days after treatment withdrawal but not at 48hr of treatment withdrawal. This Relaxin3 upregulation could contribute to an internal mechanism countering the alcohol induced aggressive behavior.

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IMMUNOLOCALIZATION OF TENTONIN-3 IN HUMAN CUTANEOUS END-ORGAN COMPLEXES

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Tactile sensation is a part of mechanosensation originated on low-threshold mechanoreceptors (LTMRs), i.e., primary sensory that extends to the skin and are associated with specialized cells like Merkel cells (forming Merkel cell-neurite complexes) or terminal glial cells to form to form sensory corpuscles or cutaneous end organ complexes (Meissner corpuscles, Ruffini's corpuscles, Pacinian corpuscles). In these structures mechanotransduction takes place. Mechanical forces can trigger mechanically gated ion channels involved in mechanotransduction, especially PIEZO, and convert mechanical stimuli into electrical signals (action potential). Recently, a new low-threshold cationic ion channel called tentonin-3 (TTN3/TMEM150C) has been detected in primary sensory neurons, muscle spindles and baroreceptors. Here we used immunohistochemistry and double immunofluorescence to analyze the occurrence of TTN3 in sensory nerve formations of the human digital glabrous skin. We have found TTN3 immunoreactivity in the axons of Meissner, Pacinian, Ruffini and simple lamellar corpuscles, as well as in the axons supplying Merkel cells. Present results strongly suggest that TTN3 could be involved in slowly and rapidly adapting mechanotransduction in human cutaneous end organ complexes.

PROJECTIONS FROM THE NUCLEUS INCERTUS TO THE RETROSPLENIAL CORTEX IN RATS

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Both implicit and explicit memories rely on contextual cues to associate facts and actions. The retrosplenial cortex (RSC) plays a crucial role in providing the context for incoming information. It is interconnected with the prefrontal cortex, sensory areas in the parietal, temporal, and occipital lobes, as well as hippocampal-related regions. Reciprocal connections have also been observed between the RSC and limbic thalamic nuclei. Although there are reports suggesting projections from the nucleus incertus (NI) in the pontine tegmentum to the RSC, this projection remains understudied.

The NI contains neurons that produce and release relaxin3 (RLN3), which ascends to forebrain areas involved in cognitive and emotional processes such as the medial septum, RSC, medial temporal lobe, amygdala, and prefrontal cortex. To investigate the connections between the RSC and NI, we conducted experiments using anterograde and retrograde tracers. Our findings demonstrate that the NI receives projections from the RSC, indicating bidirectional long-distance connections between these regions. Additionally, we confirmed that RLN3 neurons in the NI project to the RSC, with RLN3 fibers preferentially locating in the inner 4-6 layers of the RSC.

Using RNAscope, we examined the expression of the RLN3 receptor, rxfp3, and its association with either glutamate (VGluT) or GABA (VGAT) transporter. Our results indicate that rxfp3 is primarily associated with VGAT. Considering previous reports suggesting that rxfp3 stimulation mainly leads to inhibition, it can be inferred that the NI projection to the RSC primarily results in the release of intrinsic inhibition, thereby activating the main outputs of the RSC.

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VIDIAN NEURECTOMY BY ENDOSCOPIC DISSECTION FOR TREATING A CASE OF POSTCOITAL UNILATERAL HYDRORHINORRHEA: ANATOMICAL AND PHYSIOLOGICAL BRIEF REVIEW

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The nasal mucosa contains sensory, parasympathetic, and sympathetic nerves; several stimuli, such as sexual intercourse, can cause a secretory and vasomotor activity of it. A possible relationship between the nose and the reproductive system has been documented.

A 48-year-old showed unilateral rhinorrhea, nasal obstruction, sneezing, and facial edema during sexual intercourse. The response to medical treatments was negative and given the suspicion of "honeymoon rhinitis", he was offered a neurectomy and cauterization of the vidian nerve. The symptoms improved after 15 days and completely disappeared after two years.

The vidian nerve forms when the greater petrosal nerve joins the deep petrosal nerve at the foramen lacerum. Parasympathetic fibers of the greater petrosal nerve increase the secretomotor function of lacrimal, nasal and palatal glands. Sympathetic fibers, carried by the deep petrosal nerve, innervate the pupil and the action of these fibers on the nasal mucosa causes vasoconstriction, thus increasing airway flow. As previously stated, there are different stimuli that can cause sneezing and even lead to unilateral obstruction. Considering the nasal cycle described by Kayser (1985), we found a link between sympathetic and parasympathetic innervation, including arousal and orgasm, leading to "honeymoon rhinitis". This could prove the existence of connections between different components of the parasympathetic nervous system.

Finally, the results of vidian neurectomy based on the studies of Goldin-Wood and then Kamel and Zaher with their endoscopic approach are presented. The complications of the procedure are also pointed out. Nowadays, this treatment could be considered as an option.

SOMATOSTATIN EXPRESSING NEURONS IN THE MEDIAL AMYGDALA REGULATE SOCIAL DOMINANCE BUT NOT AGGRESIVITY IN MALE MICE

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Medial amygdala (MeA) has long been related to social and aggressive behaviour. Although one of the largest subpopulations of GABAergic neurons in MeA corresponds to somatostatin expressing cells (Sst), their direct implication in these behaviors is still unresearched. By using pharmacogenetic therapy, we aimed to study the effects of chronic activation or inhibition of these interneurons on socio-aggressive behavior. Our results showed that chronic activation of Sst neurons in adult male mice increased dominance behaviour but decreased territorialism and sexual interest for females. By contrast, the inactivation of these neurons was related with decreased sociability, depressive-like symptoms, and increased dominance behaviour. Together, our results demonstrate that the activation level of Sst neurons in the MeA of male mice regulates a wide range of social-related behaviours, including sociability, territorialism, social dominance, and sexual interest. Interestingly our results also demonstrate that both activated and inhibited Sst neurons in the MeA improve social dominance without affecting aggressivity, which opens new research opportunities to study how social dominance is established.

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THE HUMAN CAROTID BODY MIGHT SENSE ACIDOSIS THROUGHOUT ACID-SENSING ION CHANNELS PRESENT IN GLOMIC CELLS AND NERVES

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The carotid body is peripheral chemoreceptor deputed to detect changes in pH, this it is expected that glomus cells and/or afferent nerves express membrane proteins able to sense tissue acidosis. Interestingly, this is the main role of a family of ion channels called Acid-sensing ion channels (ASICs). Regarding the carotid body, it has been proposed that extracellular acidosis activates carotid body chemoreceptors through ASIC channels. As far as we know the occurrence of ASIC ion channels was never reported in the human carotid body. Here we used immunohistochemistry to analyze de distribution of ASIC1, ASIC2, ASI3, and ASIC4 in human carotid body of 8 subjects (5 males and 3 females), with ages ranging between 38 and 68 years. Using a battery of antibodies associated to laser-confocal microscopy, immunoreactivity for all ASIC proteins was detected in glomus type I cells1 and nerve profiles closely related to them. Occasionally faint but specific immunoreactivity was detected in satellite type II cells. Present results strongly suggest that ASIC ion channel in the carotid body and afferent petrosal ganglion neurons might monitoring pH drop in a wide range of acidosis.

THE OVEREXPRESSION OF NRG1-TYPE III WORSENS ALS CLINICAL OUTCOME IN hSOD-1^{G93A} MOUSE MODEL

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Amyotrophic Lateral Sclerosis (ALS) is an adult-onset disease that affects motor neurons (MNs) in the cerebral cortex, brainstem and spinal cord. Most of ALS cases (~90%) are sporadic, but ~10% of the cases are inherited. In approximately 20% of familial cases, the disease is caused by mutations in the gene encoding Cu/Zn-superoxide-dismutase1 (*SOD1*). Transgenic rodents overexpressing this mutated gene develop a disorder similar to human ALS.

Afferent inputs to MNs are crucial regulating their excitability. Among different types of synaptic afferents, MNs receive prominent cholinergic C-type ("C-bouton") inputs from spinal interneurons. C-boutons modulate MN excitability, and synaptic transmission throughout C-boutons is involved in the regulation of MN vulnerability.

Some C-bouton-associated molecules appear to be relevant in ALS. We have previously observed that neuregulin-1 (NRG1) accumulates in C-boutons, and described C-bouton alterations in a mouse model of ALS. The NRG1 pathway is altered in some familiar cases.

NRG1 signaling has been directly targeted in SOD1-ALS mice, and gene therapy based on intrathecal administration of adeno-associated virus to overexpress NRG1-typeIII in SOD1^{G93A} mice has therapeutic role.

By cross-breeding hSOD1^{G93A} mice and NRG1-type III overexpressor mice have we created a double transgenic mouse line. In this, we have examined changes in body weight and survival, and performed behavioral and histopathological studies in spinal cord and skeletal muscles showing no improvement in either motor phenotype or lifespan. Our results indicate that the endogenous overexpression of NRG1-typeIII is detrimental in the SOD1^{G93A} mouse phenotype.

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THE ROLE OF RELAXIN 3 IN THE RETROSPENIAL CORTEX IN CONTEXT CONDITIONED FEAR

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Fear memory is part of the typical adaptive response. However, dysregulated fear memories can be the basis of anxiety states. Context-conditioned fear (CxFC) has been used to replicate some of the events that lead to the development of these disorders. Several brain areas associated with cognition and emotion have been linked to CxFC, including the hippocampus and the retrosplenial cortex (RSC). We hypothesize that specific aspects of the CxFC process are mediated by modulatory projections from subcortical structures. Our aim is to study the role of the retrosplenial cortex in the acquisition, maintenance, extinction and expression of context-conditioned fear. In this study, we examined the effect of relaxin 3 at acute and chronic levels on the RSC in CxFC processes, as this center receives specific relaxin 3 projections from the pontine nucleus incertus. The results suggest that manipulation of both chronic and acute levels of relaxin 3 in the RSC may have an effect on specific processes of contextual fear conditioning. We observed that animals in which an AAV particle expressing constitutively the relaxin3 agonist R3I5 was injected into the RSC showed an adequate process of acquisition but not extinction of CxFC compared with a sham group. Similar findings were seen when a relaxin 3 agonist (A2) was injected into the RSC. Taken together, the results indicate a modulatory role of relaxin 3 on the RSC in context-specific fear processes.

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Oral Communications (S3): CLINICAL ANATOMY I

ANATOMICAL STUDY OF LIVER VASCULARITY TO IMPLEMENT A NOVEL SURGICAL TECHNIQUE

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At Hospital Josep Trueta in Girona, we have been at the forefront of laparoscopic liver surgery, serving as one of the pioneering centers. Our team is dedicated to strictly adherent to anatomical landmarks mimicking the surgery employed in Eastern countries, mainly in Japan.

In 2014, Professor Honda published a comprehensive article outlining the dorsa approach of the middle hepatic vein for left hemihepatectomy, elucidating all the critical anatomical turning points. In our pursuit of safer surgical practices, we collaborated with anatomists from the University of Girona to study that issue. They prepared human liver specimens to highlight the surgical landmarks necessary for the surgery. Key focal points of our study were precise distances of vessel and their relationships within the parenchyma, the Arantius ligament and the Laennec capsule.

Since then, anatomical preparations have been an integral component of the courses that we offer to surgeons nationwide. These courses incorporate a laparoscopic surgical session using cadaveric human donors, augmenting the theoretical knowledge with practical experience. Additionally numerous articles addressing this topic have been published in specialised journals.

We firmly believe that the study of anatomical specimens is pivotal in attaining surgical excellence.

ARTERIAL SUPPLY OF NASAL SEPTUM AND LATERAL WALL VASCULARIZATION

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Endoscopic skull base surgery underwent a radical change with the advent of the nasoseptal flap, based on the posterior septal artery, described by Hadad-Bassagasteguy in 2006. Since then, several flaps based on the arteries supplying the nasal mucosa have been described. The nasal septum and nasal wall are supplied by branches of both the external and internal carotid systems. The external carotid artery participates with the maxillary and the facial artery, whereas the internal carotid artery supplies the nasal cavity through the ethmoidal arteries originating from the ophthalmic artery. The main branches of the maxillary artery are the sphenopalatine artery, the posterior superior alveolar artery, the infraorbital artery (IOA), the descending palatine, and the greater palatine arteries, as well as the arteries of the foramen rotundum, pterygoid canal, and pharyngeal branch (PB). The superior labial artery (SLA) and the lateral nasal artery (LNA) arise from the facial artery

and send branches to the vestibule, nasal septum, and head of the inferior turbinate. Nowadays in skull base surgery and septal perforation closure, it is extremely important to know the irrigation of the nasal mucosa in order to create pedicled flaps based on a specific artery to ensure closure of the defects.

CRICOTIROIDOTOMY, AN OVERCOME CHALLENGE

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The prestige of the Advanced Trauma Life Support (ATLS) courses is well recognized worldwide. These courses are mandatory for various medical specialties involved in the management of polytrauma patients. The courses consist of both theoretical and practical stations. While many of the skills taught are familiar to the attending medical doctors in their routine practice, one lesser-known skill is cricothyroidotomy. This seemingly simple procedure requires precision and speed during critical moments. Any lack of accuracy in the technique can have fatal consequences for the patient.

Since the inception of the courses in Girona in 2015, we have taken a distinct approach in our skill stations compared to the rest of the country. Other locations employ phantoms or, in previous editions, pig models for animal experimentation. Our sessions are conducted in the anatomical laboratory using cadaveric human donors and specially made for the occasion anatomical preparations coupled with detailed explanations provided by an anatomical professor during the classes. This approach ensures that our students are exposed to real anatomical landmarks.

Considering that none of the students have previously performed a cricothiroidotomy, they all conclude the practical training with a sense of achievement, believing they have acquired the necessary skills to perform the procedure.

We firmly believe that the opportunity to practice on human cadavers combined with the explanations instils confidence in our students allowing them to be quick and precise in case of necessity.

KEYS OF SURGICAL ANATOMY IN LEARNING RHINOPLASTY

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Rhinoplasty is the most difficult surgery to learn among facial plastic surgery techniques. Learning rhinoplasty requires an understanding of the anatomy of the structures that shape the nasal pyramids.

The specific anatomical knowledge to perform rhinoplasty surgery has three objectives:

- Correlate the shape of the nasal pyramid with the anatomical structures in each specimen.
- Practice the different surgical approaches to expose those structures.
- Learn how to do surgical modifications of those structures to obtain the desired shape of the nasal pyramid.

We approach these objectives in ten hours work in the anatomical laboratory. The work done by the students is: nasal analysis of the specimen, nasal vestibule anatomy, SMAS anatomy and elevations, anatomy of the osteochondral vault, relationship between septal nasal cartilage and major alar cartilage, profile alignment, tip rotation and projection modification, tip restoring.

We measured the satisfaction of the students through a survey with excellent results. Therefore, we believe that the strategy used in this course helps significantly in learning rhinoplasty.

OPEN BOOK PELVIC SIDE WALL: A DYNAMIC TOOL FOR THE SURGICAL DISSECTION OF THE LATERAL PELVIC COMPARTMENT

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Surgical dissection of the lateral pelvic compartment is a challenge for the colorectal surgeon: it is an anatomical-surgical crossroads made up of urological, vascular, nervous, and muscular structures. For all these reasons, the objective of the study is to design a dynamic learning tool to facilitate lateral pelvic dissection and thus reduce the risk of perioperative morbidity and mortality. To carry it out, the dissection was performed in three cadavers, with a design of a dynamic system similar to the opening of a book. Each page contains a constant number of pelvic structures. The dissection of each page in a protocolized manner will always be equivalent to the same structures and pelvic spaces. As a result, we can observe the content of these pages. On the first page, we find the endopelvic fascia proper (ureter and hypogastric nerve). On the second page, we can see the internal iliac/hypogastric vessels, their common genitourinary vascular trunk, and the inferior hypogastric autonomic nervous plexus. Between the first and second page, the anterior and posterior pelvic spaces are seen. On the third page we find the obturator artery and vein, the obturator nerve, posterior vascular trunk, and lumbosacral nerve trunk. On the fourth page, we observe the obturator and the piriformis muscles; and finally, on the fifth page, the pelvic bone structure. As seen, this "Open Book Pelvic Side Wall" dynamic tool could facilitate surgical learning of the lateral pelvic compartment and help protocolize its surgical dissection, making it safer at the same time.

PULMONARY INTERSTITIAL EMPHYSEMA: BAROTRAUMA DIAGNOSTIC CRITERIA IN SCUBA DIVING-RELATED FATALITIES

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Pulmonary interstitial emphysema (PIE) is a finding defined as an abnormal air collection inside the lung interstitial tissues. The cases that are described in the scientific literature are very limited. PIE caused by pulmonary barotrauma (PBt) was the first iatrogenic complication in premature infants with mechanic ventilation. Arterial gas embolism (AGE) following PBt has been described as the second cause of death after drowning in SCUBA diving fatalities. According to Boyle's law, when a SCUBA diver ascends to the surface too quickly without exhaling appropriately, the gas retained in their lungs increases the intrapulmonar pressure with rupture of the alveolar air sacs.

This study includes five cases of diving deaths recorded on the Girona coast in 2019. During the autopsies, randomly chosen samples from different lobes of the lung in non-hypostatic central and peripheral areas were taken and placed in 10% formalin. The paraffin-embedded lung samples were cut into 5-µm sections and stained with haematoxylin and eosin.

Our histopathological results show in two cases a pattern of diffuse PIE caused by PBt. We believe that alveolar tears provide the avenue for entrance of air into the stroma of the lung. This air develops an emphysema within a perivascular sheath defined as cystic spaces inside the lung interstitial tissues, and allows air to escape into the pulmonary venous system, thereby accessing the left side of the heart. When air bubbles reach the cerebral arterial circulation, they interrupt blood flow to the brain, and cause AGE with brain anoxia and diver's death.

REVIEW OF ANATOMICAL CONCEPTS OF THE RETRORECTAL SPACE AND THE ENDOPELVIC FASCIA: WALDEYER'S FASCIA AND RECTOSACRAL FASCIA

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Since Wilheim Waldeyer's anatomical descriptions in 1899 to the present, many authors have tried to explain the morphology and function of pelvic fascial structures and, among them, those that limit the retrorectal space. The differences in the descriptions of the floor of the retrorectal space have been controversial.

A descriptive observational study has been designed and a detailed anatomical dissection of the cadaver pelvis has been performed.

A total of 58 pelvises have been evaluated, 34 male and 24 female formalized and sagittally sectioned.

As we progress in the posterior dissection of cadaver pelvises, we observe that the rectosacral fascia divides the retrorectal space into superior and inferior. This division is evident in 64.7% of the male pelvises and in 70.8% of the female ones.

Its origin at the level of the presacral parietal fascia is variable in both sexes, most common at S4 level, but also from S3 and S2 level.

In all cases, the rectosacral fascia joins the rectal visceral fascia caudally, about 3-4 cm above the anorectal junction.

The floor of the retrorectal space is formed by the fusion of the presacral parietal fascia and the rectal visceral fascia resting on the levator ani muscle. This fusion of both fascias would constitute the Waldeyer's fascia.

Precise description of the anatomical planes has implications for the standardization of surgical procedures.

SYSTEMATIC REVIEW AND META-ANALYSIS ON PREVALENCE OF VARIANTS IN THE PANCREATICOBILIARY DUCT JUNCTION AND ITS ASSOCIATION WITH CANCER

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The aim of this study was to describe the prevalence of anatomical variants of the pancreaticobiliary junction (PBJ) and report its association with subjects with cancer.

We searched MEDLINE, Scopus, Web of Science, Google Scholar, CINAHL, and LILACS databases from their inception up to April 2023. Two authors independently performed the search, study selection, and data extraction, and assessed the methodological quality with the assurance tool for anatomical studies (AQUA). Finally, the pooled prevalence was estimated using a random effects model.

We found 50 studies that met the eligibility criteria. Twenty studies with a total of 34,789 subjects were included in the analysis. The overall prevalence of an anomalous pancreaticobiliary junction (APBJ) variant was 10% (95% CI = 8–11%). The prevalence of cancer associated with variants of APBJ was 19% [95% CI = 13–26%].

An APBJ can cause an obstruction of the biliary ducts, resulting in various clinical complications such as bile duct cancers. Hence, knowing this variant is extremely important for surgeons and especially for those who treat the gastroduodenal region.

TRANSPALPEBRAL TRANSORBITAL ENDOSCOPIC LATERAL APPROACH TO THE MIDDLE CRANIAL FOSSA: ANATOMICAL STUDY IN CADAVER

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Transorbital expanded endoscopic approaches allow different areas of the skull base to be approached. The aim of our study is to analyze, by means of a transpalpebral transorbital lateral endoscopic approach (TTLEA), the main anatomical bone and neurovascular structures of the middle cranial fossa. An anatomical study was performed on 12 orbital cavities corresponding to 6 cadaveric heads. All specimens were previously injected with colored latex through both carotid systems. The mean distance from the orbital rim to the zygomatic-facial foramen and to the zygomatic-temporal foramen was 11 mm and 16 mm, respectively. In all cases the meningo-orbital foramen was found at a mean distance from the orbital rim of 34 mm. The FOS was located posterior to the meningo-orbital orifice at 39 mm. The foramen rotundum and foramen ovale were separated by 10 mm. Anterior to the foramen ovale a bone prominence was observed in all cases. In 11 cases (92%) the entrance of the accessory meningeal artery was evident inside the foramen ovale and in one case an accessory foramen was observed. The middle meningeal artery was in all dissections within the foramen spinosum. The TTLE offers a wide and direct exposure of the middle cranial fossa. It should be considered as an alternative to transcranial approaches in certain lesions invading the lateral region of the FCM, the lateral wall of the cavernous sinus or the infratemporal fossa.

Oral Communications (S4): EMBRYOLOGY, DEVELOPMENT & MISCELLANY

RETRO-AORTIC LEFT RENAL VEIN: EMBRYOLOGICAL AND CLINICAL DISCUSSION

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Retro-aortic left renal vein (RLRV) is an uncommon anatomical variation, where the left renal vein (LRV) lies between the abdominal aorta and the lumbar vertebrae bodies before draining into the inferior vena cava (IVC).

During the routine dissections for prossection activities preparation, we found three cadavers with the presence of a RLRV. We discuss their possible embryological origin and their potential clinical consequences.

RLRV is a rare anatomical finding, with a prevalence of 0.5-3.6%, and only a minority of individuals present clinical symptoms. The most common clinical manifestation is haematuria derived from the compression of the RLRV between the abdominal aorta and the corresponding vertebrae, known as posterior nutcracker syndrome. Other primary symptoms are varicocele, left ovarian vein varices, and flank pain. The male-to-female ratio is still under debate.

The embryological origin of the LRV lies in the formation and regression of anastomoses of three sets of paired veins. Anomalies arise from missteps during the arrangement of these anastomoses and are organized according to their drainage site, appearing in orthotopic and heterotopic positions.

As for the diagnoses of RLRVs, angiographies, CT scans, multidetector-row computed topographies, MRI, and sonography are equally used. Many individuals are undiagnosed until clinical symptoms appear or if they are undergoing retroperitoneal surgery, such as a renal transplant. Failure to identify this anatomical variation can lead to severe bleeding and organ damage, as well as other life-threatening complications during surgery.

CONSTRUCTIVE OSTEOLOGY PROJECT

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We present the initial results of a Grade Thesis on the osteology of the head and neck for Dentistry students. The project is planned with a focus on sustainability and accessibility. Bones, obtained from corpses to which skeletonization techniques have been applied, were used as models to obtain digital images. The images were edited to identify relevant anatomical references and then a video was edited on each bone to help students review the learning objectives of the course. Subsequently, the bones were scanned with a 3D laser

oral scan. The 3Dscan data was used to produce a tridimensional virtual model to review in the student's communication devices (phone, tablet, computer) the learning objectives presented in the videos and images, as well as to produce by additive printing a bone model. Several materials and methods have been used to produce a coherent set of teaching materials with high-quality images of the maxillary and mandible bones as well as a 3D model for the students to practice. The aim of our project is to constitute a digital database to facilitate the study of Osteology for future Health Sciences Students and Professionals. Our first results provide good quality images and videos as a complement for the "traditional" person-to-person teaching as proven by pre- and post-Covid experiences (Viswasom & Jobby, 2017; Natsis et al., 2022). 3D visualization models will increase student's autonomous deep-learning (Petterson et al., 2023) while 3D prints of the original bone specimens aim to increase student's engagement (Ye et al., 2023).

TISSUE REMODELLING IN THE HUMAN PALATINE RIDGES

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Elevation of the secondary palate has been associated with active rotation of the palatine ridges, specific proliferation of their medial border and remodelling of their mesenchymal content. In the present study, the tissue remodelling capacity of human palatine ridges is analyzed by means of stereological techniques applied to histological sections of human embryos of Carnegie stages 17 to 23. In each specimen, the right and left maxillary palatine segment were delimited. Each included the palatine (PT), with the palatine ridge, and juxta-palatine territories, which were divided into three thirds: anterior, middle, and posterior. Intrinsic growth in the thirds of each territory, i.e., that not linked to global growth, was determined from the positive or negative volumetric increments in each embryonic interval. The maximum remodelling capacity (MRC) in each third was obtained as the percentage of overall intrinsic growth that could be explained by a process of tissue transfer between neighbouring thirds with increases of opposite sign. The actual proportion transferred could not be determined due to the characteristics of the specimens. A MRC of 50.38% was estimated for the PT (24.35% by mesenchymal displacements between its thirds; 20.22% by transfer from the juxta-palatine territory and 5.81% by ceding tissue to it). The anterior palatine third, with no exchange capacity with the neighbouring juxta-palatine third, would act mainly as a tissue donor to the middle palatine third, the principal recipient of tissue transferred from all neighbouring thirds; the posterior palatine third would only receive tissue from the neighbouring juxta-palatine third.

TUMOR MALIGNANCY AS A POSSIBLE RESULT OF THE ACQUISITION OF MARKERS TYPICAL OF TROPHOBLASTIC ONTOGENY: PRELIMINARY *IN VITRO* AND *IN OVO* STUDY

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Trophoblastic and cancer tissues share characteristics such as cell migration, invasiveness, angiogenesis, metastasis, chemoresistance or immune escape. In fact, there are several molecular markers that define trophoblastic tissues such as TBX2, TBX3, HLA-G, ERVW-1 and Trop2. The objective of this work is to study the correspondence between the presence of these trophoblastic markers in different types of tumors and their malignant traits.

Tumor cell lines such as Jurkat, H69, SKBR3, MG63, SK-N-SH, HCT15, HT29, A549 and SF268 were used, and normal ones L132 and MCF-10A.

RT-qPCR studies were employed to analyze the expression of the trophoblastic genes. Aggressiveness of these lines was studied through tumor induction using *in ovo* CAM assay, analyzing their clonogenic capacity and the affected tumor area.

Results indicate that normal cell lines do not significantly express trophoblastic markers. Neither do the Jurkat, H69 and SK-N-SH lines express them (lines that correspond clinically to chemosensitive and potentially chemocurable tumors). The lines that significantly expressed trophoblastic markers (2 or more markers) were SKBR3, MG63, HCT15, HT29, A549, and SF268, which correspond to tumors with greater chemo-resistance and chemo-incurability. These results corresponded with *in ovo* results, since the H69 and Jurkat cell lines presented significantly longer tumor formation times (100 hours) in the CAM assay compared to the other cell lines (between 24 and 48 hours).

In conclusion, the expression of trophoblastic markers corresponds to the malignant features of the tumors studied, which could position them as potential early diagnostic markers or therapeutic targets against cancer.

EVALUATION OF FUNCTIONAL AND ANTHROPOMETRIC VARIABLES POTENTIALLY RELEVANT TO DEVELOP CLINICAL DECISION SUPPORT TOOLS IN CHRONIC PAIN

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Chronic pain is a leading source of human suffering and disability. However, current protocols are manly based on criteria that may not properly discriminate pain subtypes which claims indicates the need of new diagnostic strategies. Chronic pain is a complex condition involving the metabolic activity of several tissues and systems, then, it is not unreasonable to hypothesize that multidimensional analyses of functional and anthropometric data could help to develop suitable clinical decision supporting tools. This pilot study aimed to determine whether functional and anthropometric assessments may provide relevant data enabling classification tools development for chronic pain subtypes diagnose, focusing, for this study, on musculoskeletal chronic pain (MKP). The sample consisted of five MKP adults (18-45 y.o.) and five controls, who underwent ISAK-anthropometric and pressure sensitivity assessments, and completed questionnaires of physical activity, symptomatology and QoL. Data was analysed by Mann-Withney U, Pearson correlations, Principal Components and artificial neural networks (ANNs). Significant differences were observed in physical exploration variables and tests, revealing the MKP group as more active and having worse QoL, symptomatology, and limited functionality. MKP also showed more pain in the median thigh zone and unpleasant lumbar zone feeling. Also, participants with higher BMI and ISAK-Σ3 showed increased unpleasant feeling after pubic pressure. Although ANNs revealed a lack of information to reach successful classifications, these results may provide relevant outcomes, if enough sample, for new diagnostic tools developing. It is expected that increasing sample size and adding new metabolic data will allow obtaining more conclusive results.

FUNCTIONAL ANATOMY OF THE BIERING-SORENSEN MANOEUVRE: COMPARISON OF MUSCLE ACTIVATION BETWEEN DIFFERENT SURFACES AND POSITIONS

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The Biering-Sorensen manoeuvre (BSM) is performed with the legs fixed and the trunk held horizontally off the edge of either a stretcher or a Roman chair. It is used to induce the isometric activation of the lumbar musculature in studies of fatigue, electromyographic normalization and hypoalgesia. However, the conditions under which it is performed have not been standardized, and their influence on the activation of the

muscles involved is unknown. Erector spinae (ES) and biceps femoris (BF) activations were compared during the BSM both on a stretcher and a Roman chair with three anatomical landmarks at the edge of the support surface: iliac crest (IC), anterior superior iliac spine (ASIS) and greater trochanter (GT). Participants were asked to rate the difficulty of the task on each surface using the Borg scale. ES/BF activation ratio in the IC position was significantly higher than in the ASIS and GT positions, and higher in the ASIS position than in the GT position. Activation of the BF was the opposite, being greater in the GT position than in IC and ASIS, and greater in ASIS than in GT. There were no differences in the activation of the ES between the positions, nor in the levels of activation or the perceived difficulty of the task between the different surfaces. These results are important to standardize the conditions under which this manoeuvre is performed, and to reassess the hypothetical specificity of the BSM to cause a specific and isolated isometric contraction of the lumbar musculature.

HAVE MALES MORE PREDISPOSITION TO FORM BONE THAN FEMALES? AN ACETABULAR ANALYSIS

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The assumption of males being "bone formers" and females being "bone losers" was established by Rogers and colleagues in 1997. This concept of male predisposition to form bone in comparison with females has essential consequences in different disciplines. The role of bone formation and reabsorption define the skeletal aging process determining the guideless of most age-at-death estimation methodologies in bioarcheological and legal medicine contexts. In addition, this differential likelihood may have clinical implications, influencing the integrative approaches carried out in the healthcare system, especially in rheumatology and traumatology fields. Thus, this study aims to preliminary test the previous premise in the acetabulum. Since the visual examination of skeletons provides a unique opportunity to describe bony changes associated to age and disease, the acetabulum of 301 adult individuals of both sexes from two different Spanish documented osteological collections (Madrid and Valladolid) were analyzed. Specifically, the maximum bony growth present in the posterior apex of the acetabular lunate surface was measured in millimeters. Besides descriptive analyses, the mean apex growth values were compared in the different age groups between sexes by Mann-Whitney tests, being not significant in any case. Thus, the current results do not confirm the assumed postulate in the acetabulum. This mandates further research into the physiological basis underlying these changes within other anatomical areas, as well as different population groups.

THE IMMUNOHISTOCHEMICAL PROFILE OF DIGITAL SENSORY CORPUSCLES OF *MACACA FASCICULARIS*

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Glabrous skin contains cutaneous end organ complexes known collectively as sensory corpuscles that are responsible for the detection of different types of mechanosensation such as touch, vibration, or pressure. These sensory nerve formations are evaluated in humans and some animal models looking for changes in the peripheral nervous system caused by natural or experimental-induced diseases. Members of the *Macaca* gender are occasionally used in these studies, and thus detailed studies setting the specie-specific

protein pattern expression could aid to obtain experimental accurate conclusions. Here we report the immunohistochemical profile of *Macaca fascicularis* Meissner's and Pacinian corpuscles from the palmar side of hand fingers. A battery of antibodies against corpuscle constituents (axon, inner core, intermediate layer, outer core, capsule), growth factors, and ion channels (related to various modalities of somatosensory innervation) were used. Data obtained reveal significant immunohistochemical differences compared to human glabrous skin sensory corpuscles. We report for the first-time immunoreactivity for nestin, several neurotrophins and their receptors, and ion channels (PIEZO2, TRPM8, TRPC6, TRPV4), and conclude that particular features from *Macaca fascicularis* sensory corpuscles could be of interest to set conclusions in normal somatosensitivity and pathological conditions designed experimental assays.

ULTRADOLICHOCRANIUM IN A KNIGHT OF THE ORDER OF CALATRAVA. ZORITA DE LOS CANES CASTLE (GUADALAJARA), 13th -14th CENTURIES

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The description and analysis of the cranial morphology of the T4.2 individual (13th - 14th centuries) from the archaeological site of Castillo de Zorita de los Canes (Guadalajara, Spain) are presented. Sex and age were estimated and standard anthropological and paleontological methods were applied. Results indicate a male aged between 45 to 49 years, showing low skeletal preservation (IP3= 0,545), with neurocranium, non-complet splacnocranium, mandible and long bone diaphysis preserved. Craniosynostosis of sfenofrontal, sfenoparietal, temporal and sagittal sutures is observed. The maximum cranial length (230 mm) and maximum width (122 mm) indicate a cranial index of 53%, which correspond to an ultradolichocraneum (cranial index <65%), being the normal range in Spaniards 75.37% ±2.99. In addition, the left hemimaxilla and hemimandible show extensive tartar covering the lingual, labial, and occlusal aspects of the preserved teeth (I2, C, P1, i2, c, p1, m1, m2). The right hemimandible and maxilla present little tartar, elements p1, p2 and m2 were lost in vivo. The distribution and abundance of tartar could indicate the inability to open the jaw. Ultradolichocephaly is congenital, with a prevalence of 1 in 2,500 newborns in the world, being more common in males than in females. It can cause intellectual disability, difficulty in chewing and drooling, data which agree with presence of trismus. Given that the cases described in paleopathology are rare and also because he is a knight of the order of Calatrava, this individual is of special relevance.

MonBones; MICINN: Ref: PID2020-118194RJ-I00; IP Lluís Lloveras.

Oral Communications (S5): TEACHING, EDUCATION AND TECHNIQUES

COMPARISON BETWEEN FOUR BODY PRESERVATION METHODOLOGIES IN THE ANATOMY LABORATORY: PRELIMINARY RESULTS

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Despite formaldehyde has been generally used in gross anatomy laboratories for decades for its valuable results, good price and easy applicability, its exposition causes well-known adverse effects in humans. For this reason, different alternatives have arisen for trying to avoid negative outcomes. Since some of these other options have been rarely tested in human samples, the aim of this study was to compare the results in morphology, texture, and color preservation in four anatomical preservation techniques: Formol 10% (F), Kaiserling (K), Larssen Modified (LM) and Thiel Modified (TM). The samples consisted of four knees from the Body Donation Program of the University of Girona (Spain), which were immersed in each technique for four weeks, assessing the results five times, every 8-9 days, for comparison purposes. The results showed that F and K did not well preserve coloration while LM and TM did. About texture, F and LM hardened the tissues while K and TM softened them. These latter outcomes cause morphological changes: F and LM maintained the tissues shape, with light retraction, while K and TM did not, presenting morphological deformities. The current results present LM as the best option of the analyzed ones. Although hardening the samples, this technique preserves the tissues coloration and morphology, with minimal morphological changes. This technique enables the use for postgraduate courses of these specimens. Because of the study limitations, these results should be confirmed in larger samples sizes and other anatomical areas.

ANALYSIS OF HUMAN ANATOMY TEACHING IN THE TRAINING OF MEDICAL STUDENTS

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Master classes and dissection are considered the gold-standards in anatomy learning, but innovative methodologies such as 3D applications or PBL have been proven to be equally effective. Thus, our main objective was to analyse the medical students' preferences and the relevance they give to the anatomical knowledge in their training. For this purpose, 145 medical students (110 ♀; 35 ♂) answered a specific survey to analyse the usefulness of PBL, lectures or practical sessions in the anatomy learning, and the convenience of cadavers, apps, books or drawings to understand 3D anatomy. The relevance they gave to this knowledge in their studies and future career was also analysed. Acquired anatomical knowledge was found to be sufficient by 52.4% of the students. Moreover, the feeling of lack of enough anatomi-

cal competence was significantly increased in the fourth-year students, potentially associated with the learning deficiencies during COVID-19 pandemic. This knowledge was found to be essential for completing clinical modules by 61.3% of students and all methodologies were found to be very or quite useful with higher preference for practical workshops. Additionally, tools which were found more useful for understanding 3D anatomical structure were the use of cadavers and 3D apps, particularly in students who had not received any previous anatomical formation ($p<0.05$). In conclusion, students recognised that knowing anatomy is very relevant in the study of medicine and in medical care practice, and using cadavers is still considered the best method for learning anatomy despite the increasing use of 3D technology.

FACE-TO-FACE VS. E-LEARNING IN HUMAN ANATOMY: ANALYSIS OF ACADEMIC PERFORMANCE IN BLENDED LEARNING COURSES

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Educational programs in electronic systems (E-Learning) have become a part of teaching activity based on general pedagogical principles, with the focus on the student, and the teacher acting as a facilitator in the e-learning. Nevertheless, the methodologies used to investigate the impact of e-learning have been both varied and imprecise, rendering comparison and meta-analysis difficult. This study represents an attempt to overcome these obstacles with a large, homogeneous sample. We collected the results of multiple-choice examinations from the Human Anatomy-Digestive System module (degree program in medicine). All of the students were from four consecutive academic years following the same curriculum with a combined (blended) teaching method (b-learning): one part of the material was presented face to face by the same faculty members, and the other via e-learning with the same online resources. The goal of the study was to assess the degree to which each student took academic advantage of each type of learning, as well as the level of risk assumed (questions that were answered). In the sample overall (n=1160), the results were better for face-to-face learning than for e-learning. In the groups arranged by overall academic grade, this preponderance was limited to the brighter half of the student body, while those with lower grades took greater advantage of e-learning. However, the modest size of these differences indicates that both types of learning used in b-learning had demonstrated effectiveness. A positive correlation was found between academic results and the degree of risk implicit in the responses.

FROZEN CADAVERIC TRAINING PROGRAM FOR SURGICAL RESIDENTS

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The acquisition of technical skills is crucial for the professional development of surgical specialties residents. Traditional training methods involve practicing basics skills on artificial or animal models before implementing them on regular patients, progressively increasing the complexity of the procedure and always under supervision.

This approach has inherent limitations, the most important is the lack of consistency between the model and humans. In addition, the implementation of techniques in patients without previous practice in a human anatomical model is another disadvantage of the classical model.

To address this problem, the *Hospital Universitari de Girona*'s general surgery residents have been participating in an annual frozen cadaveric model surgical session since 2015, in the Anatomy Lab of the University of Girona. Residents of the five formative years participate, practicing the most appropriate interventions for each formative path, both by laparoscopic and by laparotomic approach.

This training allows residents: 1. to practice a range of interventions that improve their professional evolution; 2. to consolidate the learning of the surgical technique; 3. to reinforce anatomical knowledge; 4. to detect and modify poorly refined technical habits; 5. to increase their confidence. This experience necessarily can improve patient safety and limits the risk of first-time practice on regular patients.

PERSONALIZATION OF THE LEARNING EXPERIENCE IN HUMAN ANATOMY THROUGH THE ADAPTATION OF QUESTIONS AND CONSIDERATION OF THE STUDENTS' METACOGNITIVE PROFILE TO IMPROVE ACADEMIC PERFORMANCE USING EDUCATIONAL SOFTWARE TOOLS

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Educational software tools appeared as a didactic educational methodology complementary to traditional classes. Specifically, multiple applications have emerged in anatomy teaching due to the difficulties of access to cadaveric material. However, they lack enriched information on which learning trajectories lead the student to progress in acquiring anatomical knowledge when using educational software technologies and how to adapt these trajectories to achieve the expected learning. In this paper, we present a study using Moodle and gamification (Feed4Mi), which use learning paths according to the metacognitive profile of the students and adaptability of the questions to support the adoption of learning by students of medical careers at the University of Girona, Spain. Ninety-one students participated in the experimentation, which was divided into two case studies. The intervention used Moodle software for the respiratory and digestive systems and a second stage with the gamified tool Feed4Mi for the urinary and reproductive systems. The main findings led to the conclusion that the use of gamified components for learning anatomy is a resource that supports student learning. Also, it was determined that the design of learning trajectories in Moodle allows for adequately abstracting the academic aspects to be improved by the students. Future work is expected to support adaptive learning by incorporating new technological elements that allow the generation of personalized scenarios for studying anatomy.

QUANTIFICATION OF THE SUCCESS OF DIFFERENT HUMAN ANATOMY TEACHING TOOLS USING WEB ANALYTICS RESOURCES

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Despite the importance of face-to-face teaching of Human Anatomy, the development of new methodologies based on the use of virtual platforms is necessary to promote autonomous learning. However, we do not know what type of virtual tools students prefer. The aim of this study is to compare the effectiveness of two virtual platform models: 1) online lessons programmed with eXeLearning, based on the course syllabus, and 2) an Instagram profile with interactive quizzes. New anatomical illustrations and photographs of detailed dissections were generated. With them, an Instagram profile was created, @eldeanato, with interactive questions created with the Instagram stories quiz sticker. The level of satisfaction with the tools was measured in the usual way, by means of an online satisfaction survey, and also using objective measures of web analytics: the percentage of interaction with the Instagram questionnaires and the analysis tools of Google Analytics. Despite

the fact that the level of satisfaction with both types of tools was high, the number of visits and the percentage of use of the interactive resources was much higher. The Instagram profile allowed fluid interaction with the students, with a growing number of followers and a response rate to the questionnaires of more than 40%. These results show the effectiveness of adding interaction to the teaching of Human Anatomy, by using popular social networks such as Instagram.

REVIEW OF CLASSROOM PERFORMANCES WITH THE AUDIENCE RESPONSE SYSTEM (ARS): A RETROSPECTIVE LONGITUDINAL STUDY

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For more than a decade (2010-2023) we have used different ARS in the subject of General and Descriptive Anatomy of the Locomotor System in the 1st year of Medicine with the aim of motivating students: SIDRA, Simple Audience Response System, G-SIDRA, or Gamified SIDRA, and i-SIDRA, intelligent SIDRA, which is an artificial intelligence neural network associated with SIDRA.

After this long experience, we check if these systems were effective in improving learning and if there were differences between them. We have carried out an analytical study (ANOVA), 877 students, comparing the final grades between these three ARS systems, plus the control group (from the same teacher, only with lectures).

Statistically significant differences have been found in the grades of students who have used any of the 3 modalities compared to traditional teaching, which clearly shows the positive influence of methods that facilitate interaction between students and between teacher and student (immediate feedback). In addition, the use of gamification elements (G-SIDRA) and, above all, teamwork, has shown, in a statistically significant way, a better individual academic performance.

Pearson's chi square was also applied to find association between the different learning systems and the success rate and the distribution of qualifications, finding that both depend on the method.

Finally, the students' assessment of all these systems has been very positive in most of the items considered, although it is striking that they do not perceive the benefit that these systems imply in their academic performance, as demonstrated in this work.

ULTRASOUND AS AN EXPLORATORY METHOD OF THE UNGUAL APPARATUS FOR CLINICAL USE

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l apparatus, commonly called the nail, is one of the structures that is most explored and treated in the podiatry clinic. Currently, ultrasound is a technique that is highly integrated into the clinic, since it is a non-invasive, painless and fast diagnostic tool. The main objective of this study was to obtain normal ultrasound parameters of the healthy nail apparatus for further clinic application. To do that a total of 76 subjects (152 hallux nails) were explored with an ultrasound VINNO E35 and a linear probe X6-16L with a frequency of 18 MHz, of which 38 were men and 38 women, with an average age of 26.83±12.20. The morphometric data obtained show an asymmetry between the right hallux and the left hallux. In addition, sociodemographic and anthropometric data, as well as nail consistency, influence the ultrasound parameters collected. High frequency ultrasound allows us to explore the nail apparatus and its relationship with nearby structures. Future studies in pathology using these parameters will help us in an accurate and contrasted diagnostic.

This study was funded by the Extremadura Regional Government and the European Regional Development Fund (ERDF) through a grant to the research group (code CTS020, reference GRU21077) and Research program funded by the European Union - NextGeneration EU (PI-0148-22).

Oral Communications (S6): CLINICAL ANATOMY II

FOSTERING AUTONOMY SATISFACTION IN ANATOMY EDUCATION THROUGH DRAWING AND GAMIFICATION

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Teaching strategies for human anatomy are a current research focus, with autonomy being crucial for effective learning, linked to psychological well-being and health. Autonomy could be enhanced through gamification's reward system by promoting students taking responsibility for their own progress. Additionally, drawing practice could further promote independent work through detailed examination.

This study employed a non-randomized controlled design to conduct a natural experiment in the human anatomy subject of the first year of the Bachelor's Degree in Sports Sciences and Physical Activity. The aim was to investigate the effects of a 30-hour anatomy educational program that integrated gamification and the ORDER process (Observation-Reflection-Drawing-Editing-Repetition) on autonomy need satisfaction (ANS). The experimental group (n=60, University of Zaragoza) engaged in this educational program for a duration of seven weeks, while the control group (n=56, University of Lleida) pursued their regular educational program throughout the same period.

Pre- and post-measurements were carried out in both groups using the Basic Psychological Need Satisfaction and Frustration Scale, specifically focusing on the ANS variable (α=.754). No initial mean differences (MD) were found using a t-test (p=0.819), between the experimental group (n=60, M=15.42, SD=2.73) and the control group (n=56, M=15.28, SD=2.72).

A post-intervention t-test revealed significant differences in ANS (t(114)=3.62, p=.000), with a MD=1.62 [95% CI, 0.78 to 2.66]. The experimental group (n=60, M=16.10, SD=2.27) exhibited a higher mean compared to the control group (n=56, M=14.37, SD=2.85), with a medium effect size (d=.64).

In conclusion, integrating drawing and gamification in anatomy education effectively enhances autonomy satisfaction among students.

PIIDUZ (ID 633, convocatoria 2022) Innovación educativa en la enseñanza de las ciencias de la salud: aprender anatomía a través del arte y el pensamiento visual (visual thinking) Research group S27_20R: "Beagle. Investigación en Didáctica de Ciencias Naturales".

AN ANATOMICAL STUDY OF MYOCARDIAL BRIDGES

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Myocardial bridges are congenital anomalies where a band of muscular cardiac fibers covers a limited segment of the coronary arteries. While they are mostly benign, in some cases it can lead to myocardial ischemia, due to the compression of the artery during systolic contraction, resulting in ventricular dysfunction, arrhythmias and sudden death.

This study aims to determinate the localization and characteristics of the myocardial bridges.

A total of 54 human hearts obtained from cadavers were microdissected. Measurements were taken using a digital calliper for the length and diameter of the artery, as well as the length and thickness of the bridge.

The myocardial bridges were found in 60% of the hearts, with a total of 44 bridges identified. Most cases they were short and thin, measuring less than 2 mm. The myocardial bridges were mainly located in the anterior interventricular artery (65.9%). Nonetheless, we also found them in the left circumflex artery (27.6%), right marginal artery (2.1%) and posterior interventricular artery (4.2%). Among the hearts, 75% had a single bridge, while the remaining 25% had two to six of them. Regarding the bridge thickness, 86.4% were superficial and 13.6% were deep. Additionally, 72.7% were short while 27.3% were long.

In conclusion, the anterior interventricular artery is the most commonly affected by myocardial bridges, with the majority being short and thin. These characteristics may explain the difference in the prevalence between the radiological (0.5%-12%) and cadaveric studies (5-86%).

ATHEROMATOSIS BURDEN AND CUMULATIVE TOBACCO CONSUMPTION ARE ASSOCIATED WITH COMMON CAROTID ARTERY DIAMETER REMODELLING IN MIDDLE-AGED ASYMPTOMATIC INDIVIDUALS: THE ILERVAS STUDY

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Common carotid artery diameter (CCAD), cumulative tobacco consumption (CTC) and atheromatosis burden were associated with incident stroke and cardiovascular mortality. However, the impact of CTC and carotid plaque area on CCAD remodeling remains unknown.

Cross-sectional analysis in 8136 asymptomatic middle-aged individuals from the ILERVAS cohort. Eight-territory vascular ultrasound examination in both carotid arteries (common, bifurcation, internal, and external) was performed to measure interadventicial CCAD and to quantify total atheroma plaque area. Sex-stratified multivariate linear regression models with backward stepwise selection were developed to predict CCAD. Models were adjusted for confounding parameters such as age, height, neck perimeter, hypertension, obesity, prediabetes/diabetes, dyslipidemia, and physical activity. Beta coefficients and p-values were shown.

3986 males (mean age: 54.9 ± 5.9 years) and 4150 females (mean age: 59.7 ± 6.0 years) were evaluated. Mean CCAD was larger in males (7.70 ± .79 vs 7.14 ± .65 mm, p<.001). After adjusting for confounding parameters, total atheroma plaque area and cumulative tobacco consumption (CTC) had a dose-dependent impact on CCAD, being stronger in males (atheroma plaque beta: .420 vs .278, CTC beta: .004 vs .001). Variable importance assessment revealed that total plaque area and CTC accounted for 28.0% of the predictor importance in males and 11.8% in females. In males, they were the stronger contributing factors after neck perimeter and age. In contrast, age, neck perimeter, hypertension and height showed a higher importance in females.

Carotid atheromatosis burden and cumulative tobacco consumption were positively associat-

ed with CCAD remodeling in asymptomatic middle-aged individuals.

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IS THE LATERAL ULNAR COLLATERAL LIGAMENT (LUCL) PRIMARILY INVOLVED IN POSTEROLTERAL AND VARUS INSTABILITY OF THE ELBOW? ANATOMO-BIOMECHANICAL STUDY OF THE LATERAL LIGAMENTOUS COMPLEX OF THE ELBOW

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Nowadays there is still controversy whether the lateral ulnar collateral ligament (LUCL) is the main one involved in the posterolateral instability of the elbow, which is the most frequent pattern of chronic instability of this joint.

We present an anatomical and biomechanical study in 25 human specimens exposed to different forces and injuries. We analyse the behaviour of the lateral ligamentous complex fascicles.

Specimens were divided into 5 groups, and we performed specific injuries on the LUCL, the radial ligament, and the annular ligament following different sequences. In order to represent those forces in the three planes, we designed a device for measure the elbow displacement. After those injuries, we mesured the varus-valgus displacements, the posterior translation of the radial head and the rotation maintaining the supination of the forearm in a different degree of flexion. The force values to perform the varus-valgus displacement and rotation were 2Nm, and 15N for axial compression load.

The results showed that the values of greatest displacement in varus-valgus occurs when a simultaneous injury of the radial ligament and the LCUL were made at its epicondylar origin.

On the other hand, there is a greater displacement in rotation when the injury of the annular ligament and the LCUL occurs at its ulnar insertion. Posterior translation of the radial head is not increased by the injury of the LCUL.

The main conclusion was that, in none of the cases, the isolated LCUL injury produces a significant increase in elbow instability.

PALMARIS PROFUNDUS MUSCLE AND CARPAL TUNNEL SYNDROME. CASE REPORT AND REVIEW OF THE LITERATURE

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The palmaris profundus (PP) is a variable muscle present in the flexor muscle region of the forearms. Its implication in the etiopathogenesis of carpal tunnel syndrome has been discussed in the literature.

We present a case of a PP with a characteristic morphology, associated with a bifid median nerve (MN), found during surgery for a recurrence of carpal tunnel syndrome in a 51-year-old female patient. The PP muscle was first described with this morphology by Frohse in 1908. Initially, this muscle was considered an anatomical variation of the palmaris longus, but since 1984 the existence of both muscles has been observed in the same forearm, so the PP is considered an accessory muscle. Some authors associate the existence of a PP with compression of the median nerve in the carpal tunnel. Others, however, argue that it may be an aggravating factor but not the primary cause, or simply a casual finding during surgery. We believe that this tendon is not the primary cause of compression of the MN, but it can aggravate the situation in case of a reduced canal due to any other cause, so we recommend surgeons to resect it if it is found.

Furthermore, based on the embryological origin of the forearm muscles, we believe that this PP could actually be the radio-carpal, radio-palmar or short radial forearm muscle described as early as the 19th century.

CORRELATION BETWEEN ULTRASOUND AND DISSECTION IN THE IDENTIFICATION OF THE ABDUCTOR POLLICIS LONGUS TENDON VARIABILITY

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Despite traditional anatomy books describe the abductor pollicis longus' tendon to be unique and inserted in the first metacarpal base, recent literature has proved it uncertain. This variability could have potential clinical relevance in the physiopathology of conditions like rhizarthrosis or De Quervain's tenosynovitis. To analyze the ability of quantifying the number of tendons and insertion spots during clinical performance, 15 upper limbs from the University of Girona's Body Donation Program were scanned with ultrasound (US) by two researchers with different levels of US experience and training background. After the US study, each specimen was dissected by anatomists for comparison purposes. The preliminary results showed that, regarding the number of tendons after exiting the first extensor compartment, the more experienced researcher coincided with the dissection results in 26% of the samples, while the less experienced one did in 67%. During the anatomical study, some tendons were initially found to seem divided, but more accurate dissection showed these tendons to be actually single due to the presence of intratendinous connections. This feature might explain the previous differences between observers in US results. Thus, the consecutive tendons inserting in the same point were counted as one. The previous agreement percentages between US and dissection increased to 67% and 60%, respectively, but the inter-observer agreement decreased from 46.6% to 40%. These results seem to show that this tendon typology could lead to misinterpretation by US. Further research is needed to understand this correlation to associate ultrasound-diagnosed pathologies with potentially predisposing anatomical variants.

SENSITIVITY OF THERMOGRAPHY FOR THE CLINICAL DIAGNOSIS APPLIED TO NAIL CONDITIONS

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Thermography is a non-invasive technique that measures the heat emitted by an object, structure or body surface, providing a graphic representation of the temperature. Its application in the diagnosis of skin conditions is recent, but its use in the diagnosis of nail pathologies is much newer. The objective of this work is to analyze whether thermography is sensitive enough to be useful of nail pathologies diagnosis, especially onychomycosis.

The FLIR E60 BX thermographic camera was used and a total of 214 nails without apparent pathology of the first toe were explored (148 women and 66 men, with a mean age of 21.2 years (±2.80 years)), under the same conditions, in the same room and at the same distance. Two thermographic images were taken of each patient, one of right foot and other of left foot, and in each of them measurements were taken on 5 reference points on the nail plate. Data were analyzed with IBM-SPSS Statistics version 25.

Results show significant differences (p. value <.05) in practically all the points measured on the nails, as well as in the total average in both men and women for dermatophytes and candida detection, with the temperature being lower for dermatophytes, approximately 2ºC (p.value .032/ effect size .016), and higher in the case of candida, approximately 1ºC (p.value .047/effect size .014).

It is concluded that thermography has sufficient sensitivity to be used in the differential diagnosis in the case of onychomycosis, although more studies are necessary to know its potential in clinical diagnosis.

This study was funded by the Extremadura Regional Government and the European Regional Development Fund (ERDF) through a grant to the research group (code CTS020, reference GRU21077) and Research program funded by the European Union - NextGeneration EU (PI-0148-22).

UNDERWATER THERAPY AS A REHABILITATION METHOD IN CHRONIC NEUROLOGICAL PATIENTS

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The rehabilitation of neurological patients in the chronic phase is limited by the belief that they will not achieve any improvement.

Underwater therapy combines the beneficial properties of water and the methodology of adapted diving. This method allows you to work extensor muscle groups to increase strength and improve posture, transfers, and movements.

The study consists of 14 patients over 3 months with neurological pathologies in the chronic phase. The dive was in a 2 m deep heated pool with 2 physiotherapists and a diving instructor. They were equipped with a face mask attached to an air bottle that always guaranteed to breathe fluidly and no extra effort for it.

The first phase of confidence of the patients was worked so that they could normalize breathing and perform exercises underwater.

Constants were taken such as heart rate, O_2 saturation, and blood pressure before the session and after it. The muscle strength of the extensor groups of the upper and lower limbs was also measured with dynamometry.

Heart rate decreased in 10 patients, saturation went up in all cases, and systolic blood pressure also increased. In addition, there was a gain in the strength of the extensor muscles in both the lower and upper limbs.

Underwater therapy is a novel method that achieves a high rate of loyalty, allows complete muscle work, and improves vital signs in patients.

MEASUREMENT OF FINGER STRENGTH IN A UNIVERSITY POPULATION USING THE DEMENA SYSTEM AND ELECTRONIC FORCE SENSORS

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The hand is an essential organ for the human being, since it participates in most relational functions, activities of daily life and work. It is essential to have adequate tools to understand its function and management of its pathology. The force that the hand is capable of performing can be used to evaluate its function. In our work, we studied the force generated when performing key pinch and tip pinch movements, both in the dominant and non-dominant hand. We analyzed the relationship between the force exerted in these pinches with the sex, age and physical activity of each subject. The forces were measured in 100 participants between 18 and 29 years of age of both sexes and without pathologies that could affect the correct functioning of the hand. We used the electronic force sensor and the postural restraint system designed by De Mena in his doctoral thesis. We obtained that men performed more force than women in all the pinchs and that the dominant hand was superior to the non-dominant hand except in the tip pinch performed between the thumb and the fifth finger. We could not establish a relationship between strength and age or level of physical activity. The pinch with the greatest force was the key pinch of the dominant hand.

POSTERS PRESENTATION

Sector 1 – Clinical Anatomy, Dissecting room and Anatomical techniques

P01 - A NEW LATERAL PARAPATELLAR APPROACH EXTENSION FOR KNEE EXPOSURE: AN ANATOMICAL STUDY

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The lateral parapatellar approach (LPA) is an interesting technique for the insertion of knee prostheses in knees with valgus deformity. It allows a direct access to the stabilizing structures of the knee, shortened by the deformity. In difficult access knees, it may be necessary to extend this approach using the classical proximal quadriceps femoris tendon cross section ("quadriceps snip" extension). However, we proposed a new variant to extend the LPA by cross-sectioning the vastus intermedius tendon at its distal insertion to the quadriceps femoris tendon ("trans-intermedius vastus tendon" extension). We carried out a comparative anatomical study of both LPA extension techniques. Six cryopreserved donor knees were used. Our results showed that the distal section of the vastus intermedius tendon was more useful to expose the knee by facilitating the medial eversion of the patella. Our results also suggest that this new LPA extension may have fewer complications than the "quadriceps snip" extension. This study suggests a more efficient alternative approach for knee exposure in total valgus knee arthroplasty.

P02 - IMAGE ANALYSIS APPLIED TO THE BRACHIAL PLEXUS AND THE SCALENE MUSCLES

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The human body's brachial plexus is a complex and essential anatomical structure, located in the cervical and upper thoracic region. It is responsible for innervating and controlling the motor and sensory functions of the upper limb. It is surrounded by other muscular and vascular structures, which will also be affected in the case of pathology.

We performed a process of segmentation and volumetric reconstruction on nuclear magnetic resonance (NMR) imaging of the brachial plexus and the scalene muscles in a patient with a left-sided injury and anatomically normal right side. We also calculated the volume of the brachial plexus itself and the anterior, middle, and posterior scalene muscles on both sides.

The results showed significant differences on both sides of the body, with the left side exhibiting smaller volumetric values than the right. There was a difference of 0.544 mm^3 about the total volume of each brachial plexus (8.185 mm^3 right plexus; 8.729 mm^3 left plexus). Additionally, the comparison of volumes of the scalene muscles resulted in a variance of 0.959 mm^3 in the anterior scalene (5.112 mm^3 right side; 6.071 mm^3 left side), a difference of 0.987 mm^3 in the middle sca-

lene (5.023 mm³ right side; 4.036 mm³ left side), and a variation of 0.724 mm³ in the posterior scalene (5.517 mm³ right side; 6.241 mm³ left side).

The findings of the study indicate that brachial plexus pathology produces volumetric changes in both the plexus itself and the structures it is related to.

P03 - ANATOMICAL STUDY OF THE FIXATION LIGAMENTS OF THE SPLENIC FLEXURE OF THE COLON

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Colorectal surgeons have only considered gastrocolic, phrenocolic, and splenocolic as true splenic flexure of the colon (SFC) fixation ligaments. However, the adhesions between the body and tail of the pancreas and the transverse colon close to SFC, the pancreatocolic ligament, have not usually been given the same importance as the other three. For this reason, its section in the liberation of SFC is not protocolized, which can cause an increase in surgical time or, even, the appearance of unnecessary complications. Our objective is to demonstrate that the 4 fixing elements of SFC are true ligaments, determined by the fusion of embryological fascias. The study was carried out on 10 formalized cadavers that underwent complete extraction of the SFC with the adjacent structures, without sectioning any of the fixation elements. In each anatomical piece, each of the SFC fixation ligaments were isolated and processed for microscopic study. Using hematoxylin-eosin and Masson's trichrome staining, the number of collagen layers in each ligament was identified, which is a reflection of the number of mesothelial layers. Our results showed that 100% (10/10) of the cadavers presented the four ligaments that fix SFC: gastrocolic, splenocolic, phrenocolic, and pancreatocolic. All of them showed true ligament microstructure, with between 2 and 4 mesothelial layers. Our results confirm the presence of a differentiated anatomical structure that joins the transverse colon to the body and tail. pancreatic, histologically comparable to the rest of SFC fixations and, therefore, should be considered in any technique that requires the release of SFC.

P04 - DESCRIPTIVE STUDY OF THE ANATOMY OF THE ACETABULAR LABRUM. FUNCTIONAL AND CLINICAL IMPLICATIONS

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The anatomy of the acetabular labrum is important to understand it's function. A macroscopic and morphometric study of the acetabular labrum was carried out in 19 specimens within the framework of an anatomical study using plastination and radiological correlation. A macroscopic dissection was performed by planes until the acetabular articular surface, labrum and capsulo-labral space.

The mean diameter of the femoral head was 45.9 mm, with a cam-type observed in 12 specimens (63%). The mean acetabular diameter was 45.91 mm. Regarding the labrum, in the anterosupe-

rior quadrant the width was 2.83 mm, the internal height 7.16mm and the external height 5.01 mm. In the anteroinferior quadrant, the mean width was 2.83 mm, the internal height 7.65 and the external height 4.92 mm. In the posterosuperior quadrant, the mean width was 3.07 mm, the internal height 8.39 mm and the external height 6.56 mm. Finally, in the posteroinferior quadrant, the mean width was 2.68 mm, the internal height 5.10 mm and the external height 4 mm.

In the posterosuperior quadrant a greater internal and external height was observed compared to posteroinferior quadrant, and also a superior external height compared to anterosuperior quadrant ($p<0.05$). The anteroinferior quadrant showed a greater internal height than posteroinferior quadrant ($p<0.05$). No other differences were observed.

This is the first study to measure the articular and capsular surface of the labrum separately in specimens. It is interesting to note the variability of labral height in different areas. This data together with plastination and MRI will help to understand the relationship between the acetabular labrum and the bony acetabular rim.

The current study is part of the project 'Descriptive study of the anatomy of the acetabular labrum. Functional and clinical implications' that corresponds to the PhD of the first author.

Funding has been received for the project through scholarships:

- *Proyectos de inicio a la investigación Fundación SECOT (Spanish Society of Orthopedic Surgery and Traumatology) valued at €6,000*
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P05 - DISTINCTIVE CRANIOFACIAL CHARACTERISTICS AND BUCODENTAL PHENOTYPE IN TURNER SYNDROME: A PRELIMINARY STUDY

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Cephalometric studies in patients with Turner syndrome (TS) have revealed distinctive craniofacial characteristics, including increased cranial base flexion and reduced posterior and total length, bimaxillary retrognathism, posterior rotation of the maxilla and mandible, and micrognathia. TS is associated with haploinsufficiency of the pseudoautosomal SHOX gene, expressed in the first and second pharyngeal arches. Extensive studies analyzing the bucodental phenotype of this condition are lacking in scientific literature.

A preliminary study on the bucodental phenotype of TS was conducted, analyzing a sample of 15 patients and their relatives. Results showed 42.8% had dental number anomalies (agenesis or supernumerary teeth), predominantly in the upper incisal region. Regarding size anomalies, 35.71% had microdontia.21.42% showed enamel defects. Half presented positional abnormalities, being crowding the most frequent. Alterations in eruption patterns were observed in 35.7% (early eruption in 21.42%).

85.71% of patients exhibited a Class II (convex) facial profile, and 42.85% had an Angle Class II/1 malocclusion. Functional evaluation revealed snoring in 33.33% of patients, 35% slept badly, 42.85% had speech problems. 42.85% exhibited Grade I lingual mobility and 33.71% had undergone tonsillectomy or reduction.

The analysis of bucodental traits in relatives didn't yield significant results related to facial morphology, malocclusion, and tonsil size patterns characteristic of TS. It's necessary to comment that all patients have received recombinant growth hormone treatment, potentially affecting the prevention of orthodontic skeletal anomalies. Further studies with a larger number of patients, both with and without hormonal treatment, are needed for a better understanding of the TS bucodental phenotype.

P06 - INTRA-ARTICULAR DISTRIBUTION OF SYNOVIAL FLUID IN THE PROXIMAL INTER-

PHALANGEAL JOINT: AN ANATOMICAL STUDY ON THE INFLUENCE OF LATEX INFILTRATION POSITION

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The capsuloligamentous system of the proximal interphalangeal joint is formed by the proper collateral ligament, which tightens during flexion, and the accessory collateral ligament and volar plate, which tighten during extension. After an injury, joint stiffness can be caused by retraction or arthrofibrosis. To understand the distribution of fibrous tissue in the joint spaces according to immobilization position, an experimental study was conducted using 9 human fingers injected with latex. The distribution of latex and the volume occupied were evaluated in three different positions: extension, neutral position (between 30-40º), and flexion. The results revealed that in extension, the imprints of the ligaments and the articular surface generated more volume of latex in the posterior capsule, at the base of the phalanx, in the intercondylar canal, in the proximal area of the recess, and on the condylar sides. On the other hand, the palmar region in contact with the volar plate remained latex-free. In flexion, the anterior space, recess, and base of the middle phalanx were filled, while the posterior and lateral volumes were distributed in a very thin layer. In the neutral position, the volume was distributed in the anterior and posterior regions, but it also occupied the interphalangeal space, showing joint decoaptation. This information contributes to improving immobilization devices to prevent stiffness, as immobilizing the PIP joint in the neutral position facilitates arthrofibrosis.

P07 - MACRO AND MICRO-ANATOMICAL STUDY OF THE PERI-SCIATIC CONNECTIVE TISSUE AT THE SUBGLUTEAL SPACE

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Deep gluteal syndrome (DGS) is characterized by unspecific and mechanical buttock pain.

Sciatic nerve decompression in the subgluteal space (SGS) is one the currently used techniques for treatment of DGS. The nerve is released from the surrounding connective tissue by arthroscopy. However, there is not consensus on the precise anatomy of this perinervous connective. Moreover, it is not well known either the role of this tissue in the functional anatomy of the nerve during hip movements or its influence in the DGS aetiology.

We have done a descriptive macro-microanatomical study of the perisciatic connective tissue in 19 hemipelvis. Its morphological characteristics, adhesion zones and relationships with the musculotendinous structures have been defined.

Microdissection was done on 15 specimens. Two hemipelvis were studied by semithin sections and E12-P40 plastination (Biodur®). Two more specimens were studied by haematoxylin-eosin.

All specimens showed that the complete trajectory of the sciatic nerve in the subgluteal region is surrounded by a connective tissue sheath. A fibrovascular tissue was observed at its more proximal segment; this connective tissue is strongly fixed to deep plane at the obturator internus and quadratus femori muscles. These images show that there exists a hard join of this perisciatic connective tissue to the deep subgluteal plane. A continuum between the perineurium and the perimysium of the deep pelvitrochanteric muscles was observed either by microdissection and in semithin section.

Although the DGS aetiology is not well known, a deep knowledge of this perisciatic connective tissue could help to understand the DGS physiopathology.

P08 - MORPHOLOGICAL BASIS OF SWEATING IN DIABETIC NEUROPATHY

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Diabetic neuropathy (DNP) is an affectation of the peripheral nervous system that makes a reduction in nerve conduction velocity, loss of distal fibres and a reduction in axonal diameter. DPN patients suffer hypohidrosis in the feet skin which partly conditions the appearance of diabetic foot. Here we analyzed samples of toe glabrous skin from healthy subjects, and subjects with painless and painful neuropathy using immunohistochemistry associated with specific antibodies (S100, ∝-SMA, EMA and TRPV1) in order to study the number, morphology, and basic protein pattern of the sweat glands. The results show: 1) a less density of sweat glands in patients with diabetic neuropathy; 2) disarrangement of sweat glands, especially in subjects with pain; 3) accumulations of debris in the lumen of the glands of patients with painful neuropathy, which could be related to the lack of functionality of the glands; 4) the immunoreactivity for TRPV1 ion channel, which is related to the secretory state of the glands, was found decreased in patients with DPN even completely disappearing in painful-DPN. Since previous studies have shown that sudomotor function is one of the most reliable pre-diabetic markers to date, it could be an effective way of early diagnosis and follow-up of these patients.

P09 - STUDY OF THE ANATOMICAL SAFETY AREA FOR PERIARTICULAR ANALGESIC INFILTRATION THROUGH THE POSTERIOR CAPSULE IN TOTAL KNEE ARTHROPLASTY

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One of the main challenges in orthopedic surgery is to achieve an adequate pain management after total knee arthroplasty to ensure that mobilization, ambulation and rehabilitation are as early as possible. For this, there are different traumatological techniques, being periarticular analgesic infiltration one of the most used. The aim of this work is to determine the anatomical safety area for infiltration through the posterior capsule of the knee in prosthetic surgery by a radiological study in Magnetic Resonance Imaging (MRI) and an anatomical study in cryopreserved cadavers. For the radiological study, 100 knee MRIs were used, and distances between different neurovascular structures of the popliteal fossa were studied, comparing between age and sex. For the anatomical study, 10 knees were used, and the distribution of the infiltrated colored latex in each compartment (medial and lateral) was studied. Results of the anatomical study showed that infiltration in the lateral compartment implied a greater risk of injuring neurovascular structures, and that the space was smaller in this lateral compartment. Results of the radiological study showed statistically significant differences between sexes. Thus, we can stand out that 1) women have a smaller infiltration area than men; 2) the presence of a lateralized arteriovenous bundle reduces the infiltration area of the lateral compartment; 3) the medial compartment has a larger safety area; and 4) infiltration of the lateral compartment is recommended to be carried immediately after passing through the capsule.

P10 - THE ANATOMY OF THE PIRIFORMIS REVISED – NEW EXPLANATION OF THE PIRIFORMIS AND PELVIC SYNDROME

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The piriformis and pelvic syndrome are a pathological conditions characterized by nerve compression in the gluteal region related to the piriformis muscle, leading to pain, dysesthesias and dyspareunia, in the pelvis and leg. Anatomic relationships of piriformis origin with the sacral nerves in the pelvic cavity are still poorly understood. We aimed to investigate the relationships between the piriformis origin and sacral plexus.

Dissection of 40 unpaired hemipelvises with lumbar region and leg attached was done.

Based on the muscle position on the sacral vertebrae and around or over the sacral vertebral foramina and also regarding the crossing of the ventral branches of the sacral spinal nerves before forming the sacral plexus, four patterns of piriformis origin and nerve spacing were identified 1) medial pattern of piriformis origins with the ventral branches of the spinal nerves (S2 segment) enclosed by the piriformis (60 %, n=24); 2) the medial pattern of piriformis origins without the piriformis enclosing the nerves (15%,n=6); 3) interforaminal piriformis origins pattern with free course of the nerves (15%, n=6), and 4) lateral piriformis origins pattern with the free course of the nerves (10%, n=4). The piriformis received innervation in 40% (n=16) of cases from the S1, in 20 %(n=8) from lumbosacral trunk, in 20% (n=8) from S2, and in 20% (n=8) from S1 and S2 sacral segments.

The cadaveric study revealed that the relationship between the piriformis origin and the sacral spinal nerves contribute to the piriformis or the pelvic syndrome.

P11 - A RARE VARIATION IN RENAL VASCULARITATION

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The typical vascular supply of the kidney is described as a single renal artery originating bilaterally and laterally from the abdominal aorta at the level of the lumbar vertebrae L1 and L2, approximately 1 cm below the exit of the superior mesenteric artery. However, this pattern can have a variable incidence of around 30% of the population.

In the routine dissection of a female cadaver during the practical sessions of the Human Anatomy II (Splacnology) course of the Medicine degree at the University of Zaragoza, a variation from normality in the vascularisation of the right kidney not previously described in the literature was observed.

In the vascular and parenchymal plane of the right kidney, we observed the presence of two accessory polar arteries on one side, one superior and one inferior, which go to the superior and inferior renal poles respectively; and on the other two vascular arches which communicate between the two polar branches anteriorly and posteriorly.

P12 - TECHNOLOGICAL APPROACHES FOR THE EXPLORATION AND STUDY OF THE NAIL APPARATUS IN THE FOOT

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There are many advances in medical and experimental technology for the study of different anatomical parts of the human body: 3D printing, spectrophotometry, thermography, and ultrasound images are some examples of that. Besides, there are several ways in which technology can be applied to nail research. The objective of this work is to describe the advantages of using different techniques in the study of the nail apparatus.

In our laboratory, we have developed several analytical techniques to address the composition and ultrastructure of the nail plate of the toenails. In addition, we have applied two medical imaging

techniques in the diagnosis of foot conditions did not use a few years ago for this purpose. Technological advancement has made it possible. On the one hand, the images obtained by SEM with dispersed electrons have made possible the analysis of the elemental composition of the nail plate and immunoblots done with one specific extraction system gives us information about what types of proteins (keratins) are predominant in the nails. On the other hand, high-resolution thermography is postulated as a diagnostic method in onychomycosis in a novel way and finally, ultrasound offers images with measurements that represent a reference base for the analysis of the plate and adjacent structures in the nail apparatus.

In short, the use of these techniques applied to the study of the nail apparatus has been very useful and has generated data and has generated valuable information, opening a line of research in a system little studied.

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P13 - USE OF THE THIEL METHOD IN THE PRESERVATION OF ANIMAL CADAVERS

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The use of dissection and even different surgical techniques in animals often involves their sacrifice or fixation with formalin-based techniques for dissection purposes. We believe that implementing techniques that preserve the colour of tissues and organs, as well as their elasticity and friability, making them suitable for learning different surgical techniques, leads to significant savings in animal lives. It also provides a model where a wide range of surgical techniques can be practiced, shortening the learning curve for various surgeries, and enabling research into new techniques and approaches. In our setting, we have successfully experimented with perfusion in small animals, and recently, we performed it on a 30 kg pig, as it is commonly used in experimental surgery. The pig was sourced from the animal facility at the Faculty of Medicine of the Miguel Hernandez University of Elche. After its demise using techniques that preserved its vascular elements, the left femoral artery was catheterized, and the Thiel technique was used for perfusion. The cadaver was then preserved in a container with the maintenance solution recommended by Thiel. Its state of preservation was assessed every month until it was dissected one year later. It was observed that the tissues and organs were well preserved, maintaining their colour, elasticity, and friability. Thus, it was suitable for use and experimentation with various surgical techniques.

P14 - DEVELOPMENT AND EXPERIENCE OF THE BODY DONATION PROGRAM IN THE NORTHEAST OF MEXICO

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In Mexico, the use of human bodies for educational and research purposes has evolved into body donation programs. Previously, unclaimed bodies were the main source, but due to legal restrictions, donation programs emerged as an ethical and legal alternative. Currently, in Mexico there are two outstanding programs: one at UNAM and the other at UANL. These programs meet the high demand for bodies to cover the educational and research needs of medical students, residents, and other health professionals. The coordination of dissection and anatomical dissection activities at UANL benefits hundreds of medical students, in addition to training nearly 60 medical students in surgical techniques and more than 60 members of anatomy research groups. The ob-

jective of the "Lives that Leave their Mark" body donation program is to train excellent doctors and specialists, emphasizing values such as respect, gratitude and responsibility. Students, program managers and family members of donors are involved, promoting a moral and ethical framework. The annual commemoration ceremony closes the circle between these groups, giving thanks for the privilege of learning from the donated bodies. These programs allow the acquisition of knowledge and skills in diagnostic and therapeutic procedures, which reduces errors in professional practice. Thus, the body donation program in Mexico transcends beyond death, leaving a mark on those who learn from them.

P15 - EDWARD LOTH'S LIFE AND WORK. (IN MEMORY OF THE GREAT POLISH ANATOMIST ON THE EVE OF THE EIGHTIETH ANNIVERSARY OF HIS DEATH)

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This paper is devoted to the biography and works of the famous anatomist and anthropologist Professor Edward Loth (1884-1944). He was a creator and head of Department of Anatomy in Warsaw between 1915 and 1944. He makes important insights into development of modern rehabilitation. But first of all, he created new anatomical discipline: anthropomorphology of the soft tissues.

He completed medical education in Bonn (1908), Göttingen (1909) and Heidelberg (1912). He obtained his doctor degree in medicine on the base of the investigations of the muscular system in the Negroes. In 1912 he obtained position of assistant in the Department of Anatomy in Lwow. However, First World War began, in the hard 1915 year the restituted Polish Warsaw University invite Loth as a head of the Department of Anatomy. With great energy he involved himself into many didactic and scientific activities. Loth was well known and very active in the L'Association des Anatomistes. He organized Committee for the Soft Tissues Research - CIRP. In the year 1931 Loth collected his investigations of the soft tissues in the monumental monography edited in Paris: Anthropologie des parties molles. For this work he obtained highest prize in anthropology *Prix Hollandais* (1935). He was killed by a bomb (Second World War).

The scientific achievements of Loth were really great. Only few researchers may say that were creators of new discipline with complete methodology. His ideas were developed by next generations of anatomists in Poland, France, Great Britain, Germany and other countries.

Sector 2 – Embryology and Development, Neuroanatomy, Others

P16 - LIS1 REGULATES DEVELOPMENT OF SOMATOSTATIN-POSITIVE INTERNEURONS IN THE CINGULATE CORTEX

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Inhibitory interneurons make up around 25% of the overall neuron population. One subtype of interneurons based on neurochemical properties are somatostatin-positive interneurons (SST+ interneurons). They express somatostatin in addition to GABA and synapse on both pyramidal neurons and interneurons, regulating cortical information processing and the excitation/inhibition balance in the brain. SST+ interneurons are generated in the medial ganglionic eminence and follow a tangential pathway to reach their final destination in the cortex. Thus, they may be particularly susceptible to gene mutations associated with neuronal migration disorders. Platelet-activating factor acetylhydrolase 1B subunit alpha (Pafah1b1; also known as Lis1) is a regulator of dynein-mediated motility, mitosis nuclear positioning and microtubule organization. *Lis 1* gene

mutation has been associated with lissencephaly in humans and with defects in neural migration, disorganization of cortical and hippocampal layers, deficits in spatial learning, epilepsy and alterations in excitation/inhibition balance in animal models. We have generated an animal model, in which the Lis1 gene is deleted in SST+ interneurons specifically as a tool to analyze the role of Lis1 in long-range migratory interneurons. We have studied the number of SST+ interneurons in the cingulate cortex in postnatal and adolescent mutant mice. We have analyzed the possible alteration of tangential migration during embryonic and early postnatal development. Our results show a reduction in the number of SST+ interneurons in the cingulate cortex of mutant mice compared to controls, suggesting an alteration of the interneuron migration and/or maturation.

** These authors have contributed equally to this work.*

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P17 - PROGRAMMED CELL DEATH AND CELL SENESCENCE OF LIMB SKELETAL PROGENITORS *IN VITRO*: INVOLVEMENT OF CASPASES, LYSOSOMES AND P21

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Micromass cultures of embryonic limb skeletal progenitors replicate the cellular events associated with skeletogenesis in vivo, including a patterned process of cell degeneration involving apoptosis and cell senescence. Here we have employed the micromass assay to study the nature of cell degeneration events. In this assay "naïve" progenitors aggregate to form chondrogenic nodules and those occupying the internodular spaces exhibit intense apoptosis and progressive accumulation of larger cells showing intense SA-β-Gal histochemical labeling that overlaps with the distribution of neutral red vital staining. qPCR analysis detected intense upregulation of p21 and members of the senescence associated secrotome (SASP). P21 immunolabeling showed intense cytoplasmic, but not nuclear, positivity.

Transmission electron microscopy confirmed the presence of two morphological types of degenerating cells, including, fragmenting cells with canonical apoptotic morphology and large vacuolated cells containing phagosomes. Immunohistochemical distribution of active-Caspase 3, Cathepsin D, and β–galactosidase together with the reduction in cell death by chemical inhibition of Caspases (Q-VAD) and lysosomal enzymes (Pepstatin A) suggest the redundant implication of both pathways in the dying process. In addition, chemical inhibition of P21 (UC2288) is indicative of a complementary role of this factor in the dying process. We propose that this model of tissue remodeling involves the cooperative activation of multiple degradation routes. Furthermore, we conclude that neutral red vital staining, which was employed for decades to map the areas of cell death in the embryo, is in fact a marker of what is now called cell senescence.

P18 - THE COLLECTION OF HUMAN FETUSES FROM ANATOMY DEPARTMENT OF GRANADA UNIVERSITY: A MACROSCOPIC STUDY

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The fetal anatomical collections held by universities serve as a valuable resource for studying and conducting research. At the University of Granada, the Department of Human Anatomy and Embryology possesses a collection of 283 fetuses. The objective of this study was to conduct a comprehensive examination of these fetuses in order to present data concerning the malformations they exhibited. The findings revealed

a higher occurrence of aborted fetuses between 4.5 and 6 months of gestation, with macroscopically evident malformations observed in 56% of the cases. In conclusion, this study highlights the educational and research value of these anatomical specimens, while also providing significant insights into fetal development and the causes of spontaneous abortions.

P20 - THE MALLEOLAR LIGAMENT: A NEW TEMPOROMANDIBULAR LANDMARK?

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The discomalleolar ligament has not yet been mentioned in the traditional human anatomy textbooks. However, it is recognized as a significant landmark in articles on arthroscopy of the temporomandibular joint. During endoscopy, the identification of the ligament is possible in ⅕ cases. On the other side, in dissections it is observed constantly. The first anatomical description of the ligament was made by Pinto in 1962 and completed by Komori et al. in 1988.

Six left and seven right temporal bones from 7 human specimens were evaluated using a traditional anatomical preparation under an operating microscope. The specimens were through the medial cranial fossa starting. The topography and attachments of the discomalleolar ligament were analyzed.

A flat, thin, occasionally translucent and quite brittle ligament, with a triangle shape, connects the malleus to the upper posterior region of the temporomandibular joint.

However, the attachment of the ligament to the malleus is variable. It connects to the anterior malleus ligament from the anteriomedial side, then to the sphenomandibular ligament, which is in fact its continuation. Anterior ligament of malleus runs together with the tympanic artery in the anteromedial part of the petrotympanic fissure. The disc of the temporomandibular joint and its upper lamina serve as the ligament's points of attachment.

In conclusion, the authors propose using the *De Moraes* anatomical term „malleolar ligament", which is composed, respectively, of the anterior (tympanic) and posterior (articular) parts and is a permanent feature of temporomandibular joint ligaments, because of a shared link to the malleus.

P21 - EXPLORING CELLULAR PLASTICITY OF THE OXYTOCINERGIC SYSTEM IN HYPOTHALAMIC AND EXTRA-HYPOTHALAMIC NUCLEI

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The neuropeptide oxytocin (OXT) has been studied as a regulator of complex behaviors and homeostatic functions. This neuropeptide is synthetized at specific hypothalamic nuclei, such as the paraventricular nucleus (PVN), suprachiasmatic nucleus (SON), and the retrochiasmatic area (RCH) and other extra-hypothalamic areas like bed nucleus of the stria terminalis (BNST). To study the oxytocinergic system we have analyzed the plastic properties of OXT circuits in the adult brain using tissue clearing techniques (iDISCO$^+$) and 3D imaging. Our study has revealed region-specific cell plasticity in several hypothalamic nuclei in response to sexual experience, motherhood, and aging. Our data indicate higher OXT level in females, which seemed significantly increased after parturition in several hypothalamic nuclei, particularly the SON, suggesting changes in the internal program of a distinct population of OXT neurons. Moreover, natural aging also induced plastic changes in the oxytocinergic system by reducing the number of OXT-expressing cells in rostral hypothalamic areas. Our findings reveal the cellular dynamics underlying the specification and plasticity of the oxytocinergic system during development and in response to critical life events during adulthood.

P22 - MOLECULAR AND MORPHOLOGICAL ANALYSIS OF DOPAMINERGIC NEURONS OF THE SUBSTANTIA NIGRA AND THE ENTERIC NERVOUS SYSTEM IN A RAT MODEL OF PARKINSON'S DISEASE

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Parkinson's disease is the second most frequent neurodegenerative disease. Gastrointestinal disorders are early consequences of Parkinson's disease. Therefore, it is evident that this disease is not restricted to the central nervous system but significantly affects the enteric nervous system. The prototypical cytopathological markers of this disease, large aggregates of the a-synuclein protein known as Lewy bodies, have been observed in enteric nervous plexuses. This discovery has arisen theories about the origin of the pathology in the enteric nervous system and its propagation to the central nervous system by the vagus nerve.

The Golgi complex of nigral neurons appears fragmented in Parkinson's disease, a characteristic common in most neurodegenerative diseases. Our previous studies in a cellular model and post-mortem human substantia nigra, demonstrate that fragmentation of the Golgi complex is an early event in Parkinson's disease, previous to α-synuclein aggregation. In addition, the distribution and levels of regulatory proteins such as Rabs and SNAREs are altered, suggesting that Parkinson's disease is a membrane trafficking-related pathology. In this study, using a hemiparkinsonian rat model based on the injection of the 6-hydroxydopamine toxin, we found that the Golgi complex in dopaminergic neurons from nervous plexuses of the proximal and distal colon is fragmented and distribution and expression levels of some regulatory proteins are altered. Our results support that Golgi complex structure and expression level of some proteins, especially syntaxin 5, could be useful as early sentinels of the disease.

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P23 - NEW EVIDENCE ON PROLACTIN SYNTHESIS IN THE CHOROID PLEXUS AND ITS DOPAMINERGIC AND ESTROGENIC REGULATION

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The first site in the central nervous system, where receptors for prolactin have been described in large numbers, is the choroid plexus. Initially, it was associated with a selective hormone transport system from the blood to the cerebrospinal fluid (CSF); however, in receptor-knockout mice, prolactin was still detected in the CSF.

In the present study, immunocytochemistry revealed the presence of prolactin in the choroid plexuses, and in situ hybridization revealed the presence of prolactin mRNA in the choroidal epithelial cells, suggesting the synthesis of the hormone in these cells.

Our study shows that the expression of the hormone in the choroidal epithelium is modified in relation to treatment with dopamine agonists, such as cabergoline, which inhibits hormone expression in a dose-dependent manner. The estrogenic environment also affects the expression of the hormone, such that the absence of estrogens after ovariectomy significantly increases the expression of the hormone in the plexuses, an effect that disappears if estrogens are administered after castration.

The results obtained suggest that the regulation of prolactin synthesis in the choroid plexus maintains differences with the regulation of pituitary synthesis of the hormone, in such a way that it follows a similar inhibitory pattern when the effects of dopamine agonists are analyzed, and a reverse

regulatory pattern when analyzing estrogenic effects.

These results cast doubt on whether the prolactin present in the CSF comes from blood filtration to regulate the dopaminergic neurons of the arcuate nucleus, responsible for the tonic inhibition of pituitary prolactin synthesis and release.

P24 - PHOTOPHASIC & MORPHO-FUNCTIONAL STUDY OF THE OVINE PINEAL GLAND

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Architecture of the pineal gland is characterized by the lack of a common pattern. Its compartmental division is not as evident as in other glandular structures of the body. In some species, based on staining and morphological characteristics (among others), a peripheral and a central zone have been described, as well as diverse regions. In a similar way, variations in pinealocytes nuclear sizes that could depend on factors like luminosity cycles, seasons and circadian rhythms have been observed, thus opening the debate on whether the pineal gland is a complex multifunctional organ. For all this, our study has focused on analyzing the structural organization in the pineal gland of ovids of the Merino-Aragonese race during different hours of the day, trying to establish if, as it seems to exist in rodents, a similar cortico-medullary structural organization and light-dependent changes in pinealocytes karyometric indices also exist in this species. Results shown significant differences in general karyometric values in between layers and photophases. This states that the ovine pineal presents several layers whose functionality diverges according to photophases, reinforcing the theory of the pineal gland as a multifunctional organ.

P25 - PROLACTIN AND TAU POSITIVITY IN THE HIPPOCAMPUS OF IRS2 KNOCKOUT MICE WITH PERIPHERAL INSULIN RESISTANCE

Blanco EJ[1], Catalano-Iniesta L[1], Carretero-Hernández M[1], García-Barrado MJ[2], Hernández-González D[1], Torres L[1], Carretero J[1]

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Peripheral insulin resistance has been associated with development of neurodegenerative diseases such as Alzheimer's disease. The mouse KO for IRS2 (protein intracellular insulin receptor substrate) is a model ideal experimental for the study of the peripheral resistance to insulin and its effects on the brain (it has been found to cause brain developmental delay, giving rise to smaller brains) and causes hyperphosphorylation of Tau (closely related to Alzheimer's disease). Among the many biological actions of prolactin, there are its neurogenic and neuroprotectors effects, as well as their involvement in social, maternal and learning behaviours and consolidation of long-term memory. For checking if hippocampal prolactin is altered by the absence of IRS2 and whether or not it is involved in the Tau hyperphosphorylation, a immunocytochemical, morphoplanimetric and densitometric study was conducted prolactin and Tau in the Hippocampus of IRS2 KO normoglycemic mice. Noting that in dentate gyrus of these animals decreased the number of neurons in the granular stratum and, at the same time, the number of positive neurons to prolactin and its intensity of reaction. All this is accompanied by an increase in the size of such neurons. Similar results appeared in the neurons of the stratum pyramidalis of the CA1 region of the Ammon horn.

Conversely, the neurons of the stratum pyramidalis of the CA3 region presented greater intensity in prolactin positivity. The increase in Tau intensity occurred equally in the dentate gyrus and in the two regions of Ammon's horn analyzed. Tau positivity is dissociated from prolactin positivity, at least in the CA3 region.

P26 - SEX-RELATED VARIATIONS IN HIPPOCAMPAL AKT-EXPRESSION IN THE RAT BRAIN

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Akt is a mediator that is activated by several growth factors and is involved in the inhibition of apoptosis. The purpose of this preliminary study was to observe the dimorphic differences in Akt distribution in the hippocampus of adult Rattus norwegicus. The results obtained suggest the existence of severe sexual dimorphism regarding Akt in the hippocampus, where the anti-apoptotic effects of the Akt pathway on memory and learning consolidation are vital for neuronal survival. After a densitometric analysis, the largest difference was observed in Cornus Amoni-1 (CA1) and Dentate Gyrus (DG), while no differences were observed in CA3. However, the distribution of Akt in CA3 in male rats was mainly cytoplasmic, while in females, the immunostaining was on both the cytoplasm and nuclei. These significant results might open prospects for future studies to show evidence of the roles of growth factors and sexual hormones in the brain.

P27 - SEXUAL DIMORPHISM ANALYSIS OF HUNTINGTON IN THE HUMAN AMYGDALA IN HUNTINGTON'S DISEASE

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Huntington's disease is one of the rare hereditary and degenerative diseases of the central nervous system. Like other neurodegenerative diseases (e.g., Alzheimer's disease and Parkinson's disease) course with associated proteinopathies. Striatal huntingtin deposits allow Vonsattel neuropathologic staging. However, the human amygdala in one of the most important hubs regarding proteinopathies. Recent studies indicate that huntingtin aggregation occurs early in the amygdala, as occurs in other neurodegenerative diseases. Given the autosomal dominant pattern of inheritance, the prevalence of Huntington's disease is the same in both sexes. However, data on whether gender influences the disease process remains to be studied. Accumulating evidence points to sexually dimorphic differences in some aspects of neurodegenerative disorders. The aim of this study has been, therefore, to explore whether huntingtin distribution could be sexually dimorphic among human amygdaloid nuclei.

In this study, 11 human amygdalae (7 from men and 4 from women) from the National Network of Brain Banks of Spain BTCIEN National Biobank of Spain were analyzed. All the protocols used All protocols were approved by the Ethical Committee of Clinical Research at Ciudad Real University Hospital (PID2019-108659RBI00). Immunohistochemistry against hunting antibody was carried out. Huntingtin distribution was analyzed among the different amygdaloid nuclei and data were statistically analyzed considering sex as an independent variable. The results shed light on only about the pathology associated to Huntington disease but to the sexual dimorphism perspective among neurodegenerative diseases.

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P28 - RETINAL GLIOSIS AND ALTERATION OF THE INNER BLOOD-RETINAL BARRIER AS A RESPONSE TO CHRONIC ARTERIAL HYPERTENSION

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Chronic arterial hypertension (AHT) is related to tissue damage to the ocular barriers. For correct ocular function, maintenance of the retinal structure and the integrity of the inner blood-retinal barrier (BRBi) is essential. Retinal glial cells (Müller cells and astrocytes), together with inner retinal blood vessels (iRBVs) perform a multitude of physiological and maintenance functions, including metabolic supply, ionic and water balance or protection against oxidative stress damage.

The aim of this research was to study the effects of Chronic AHT on the structure, morphology and function of the retina and BRBi. For this purpose, histological sections of eyes from Wistar Kyoto control rats (WKY) and spontaneously hypertensive rats (SHR), both 6 months old, were processed to study the expression of Aquaporin-4 (AQP4), acid glial fibrillary protein (GFAP), Vimentin and glucose transporter-1 (GLUT1) in the retina by immunofluorescence techniques for laser scanning confocal microscopy.

In SHR we found an increase of GLUT1 in iRBVs when compared to WKY rats. At the same time, an increase of AQP4, GFAP and Vimentin was observed in retinal glial cells of SHR. These changes could involve the loss of the neurovascular unit that could lead to altered BRRi functionality and a reduction in the number of Müller cells, together with an increase in the number of astrocytes, producing reactive gliosis.

P29 - MORPHOLOGICAL ALTERATIONS OF GLIA AND THEIR RELATIONSHIP WITH COGNITIVE ALTERATIONS IN TWO ANIMAL MODELS OF CHRONIC PAIN

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Chronification of pain and sensitization phenomena are not only the result of direct neuronal communication, but also require interaction between neurons, glia, and immune cells. Glia is currently at the forefront of basic pain research, not only because of its apparent direct relationship to the etiopathogenesis of various chronic pain syndromes, but also because of their relationship with comorbidities, such as cognitive alterations. This leads to the idea of a glial factor involved in the cognitive damage derived from chronic pain. The main objective of this pilot study is to identify morphological changes in the glial cells of nuclei involved in pain processing and cognitive performance in two animal models of chronic pain: the chronic constriction injury model (CCI), and the reserpine-induced myalgia model (RIM). 32 male Sprague-Dawley rats were used. A classical immunohistochemistry of NeuN, IBA1 and GFAP markers was performed. Nuclei analyzed were the medial prefrontal cortex (mPFC) (infralimbic (IL) and prelimbic (PL) areas), and hippocampus (HPC). Statistically significant differences were observed in GFAP expression patterns in mPFC both in the CCI model ($t=-2.918$; $p<0.05$) and in the RIM model ($U=-1.470$; $p<0.05$). Also, morphological differences were found between astrocytes and microglia in the experimental conditions with respect to their controls in both mPFC and HPC. This simple immunohistochemical study of the glial populations in CCI and RIM models showed statistically significant differences, so it would be interesting to further study the role of glia in the relationship between chronic pain and cognitive alterations with more specific techniques.

P30 - MEDIPILLS 2.0: CREATION OF ANATOMICAL MICROPILLS COMBINING REAL AND VIRTUAL DISSECTION IN MEDICINE GRADE

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The Audiovisual Pills include didactic materials in short format that can be implemented in the classroom or outside of it. In the 2021-2022 academic year, we carried out a first pilot experience in which the creators and editors of the short vid-

eos (MEDIPILLS) were the first year' students of the UMH Medicine Degree. During the 2022-23 academic year, we have proposed to improve the activity by providing the possibility of combining real dissection with the use of a 3D digital tool: Complete Anatomy (3D4 Medical from Elsevier). In MEDIPILLS 2.0, students recorded the images and/or videos of the actual dissection to create their MEDIPILL and generated the content from Complete Anatomy by using touch screens on which the application was installed. Before and after the completion of the project, the students completed questionnaires regarding their expectations about the project, their previous knowledge regarding the use of digital tools and the use of Complete Anatomy. Finally, the videos were screened before a panel of anatomy teachers who evaluated the videos and three prizes were awarded to the 3 best MEDIPILLS 2.0. It is interesting to note that, in addition to encouraging motivation and learning, it has fostered fundamental transversal skills such as digital, communication, creativity, responsibility or teamwork, among others. This experience shows that encouraging more active roles of the student body in their own learning facilitates the acquisition of knowledge of the subject.

Proyecto:PIEU-A/2022/09

Sector 3 – Teaching and Education in Anatomy

P31 - EFFECTS OF TEACHING INNOVATION TECHNIQUES ON ACADEMIC PERFORMANCE: A STUDY IN FIRST-YEAR PHYSIOTHERAPY STUDENTS

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Teaching innovation techniques replace traditional lectures, promoting active and participatory learning. Methods such as project-based learning, collaborative work, and educational technology are used to stimulate students' creativity and critical thinking, fostering key skills for their development.

We conducted a study with first-year physiotherapy students in the subjects of Basic Anatomy and Trunk (ABT) and Anatomy of the Musculoskeletal System and Limbs (ALM), across different academic years. We selected courses where only lectures and dissection lab practices were used, compared to other courses where various teaching innovation techniques were implemented alongside lectures (flipped classroom, wooclap, short videos, interactive images, etc.).

The results of the study revealed significant differences in the means among different years and in both subjects. When comparing the grades obtained in ABT and ALM between cohorts, statistically significant differences were obtained using Mathematica 13.1 software.

In conclusion, combining teaching innovation activities with theoretical and practical exams positively impacted final academic results and passing rates. It is worth noting that this influence was even more notable in the subject of Anatomy of the Musculoskeletal System and Limbs, which belongs to the second semester.

P32 - ANATOMICAL POSTERS APPLIED TO OCCUPATIONAL THERAPY: THE PA-TO PROJECT

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Students of the Occupational Therapy (OT) degree in Human Anatomy subject must learn a large volume of complex terms in a short period of time. Faced with this reality, the PA-TO project has been carried out: Anatomical Posters applied to OT.

The main objective of this project is to improve active and collaborative learning in OT students in relation to functional anatomy applied to occupations.

The students were divided into groups, and they were randomly assigned an occupation. The

homework consisted of capturing in a virtual poster the anatomical structures of the locomotor system involved in that occupation, using free software. Subsequently, they recorded an explanatory video of the poster that was exhibited at the "PA-TO Awards". For the evaluation of the project, an anonymous satisfaction survey was carried out. Moreover, the marks of the partial examination of the locomotor system were compared with the results of previous years.

Participation in the satisfaction survey was 54% of the participants (n=53). The 91% consider that thanks to the homework, they have learned more about the anatomy of the locomotor system and 83% believe it is necessary to carry out more activities like this. The final level of satisfaction with the project was 8.1 out of 10. Regarding the results, this year's grades have risen on average almost two points out of 10 compared to the previous year.

As a conclusion, the project is motivating and has improved the learning of the anatomy of the locomotor system of the participants.

This project was supported by PIEU-B/2022/13 grant from UMH.

P33 - ANATOMY LEARNING ONLINE MODALITY VS FACE TO FACE

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The teaching of anatomy in the degree in Podiatry is of great importance, being considered as the backbone where the subjects of pathology or surgery are articulated, essential subjects for the performance of the professional activity of the podiatrist.

In general, learning this subject is mainly by rote (due to educational tradition) for various reasons: a large amount content, that does not favor applied learning, and that they are taught in the first year of university, being an adaptation period for the student.

The objective was to study the different approaches to learning following the different scenarios of the UCLM during the two academic years 2019-2020 (online modality) and 2021-2022 (face-to-face modality).

A total of 105 students (37 from the 2019-2020 academic year) enrolled in anatomy participated in the study and administered the R-SPQ-2F questionnaire adapted to Spanish.

During the 19-20 academic year (online modality), the students reported a higher score towards the superficial approach (92% of the students) with respect to the 20-21 academic year (face-to-face modality) where there was an almost similar trend between the superficial approach and deep (59% and 41.2% respectively) with significant differences between the two courses $p<0.001$.

The return to the face-to-face modality, fundamental tools such as dissection were recovered, and favored deep learning.

P34 - BENEFITS OF THE HUMAN ANATOMY SIMULATOR "SIMUTÓRAX" TRANSLATED INTO BASQUE IN 2ND YEAR MEDICINE STUDENTS OF THE UNIVERSITY OF THE BASQUE COUNTRY (UPV/EHU)

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Current anatomy learning faces the challenge of combining the latest technologies with classical teaching methods. Simulators are becoming increasingly important, as they have shown to be very useful educational tools for both, classroom teaching and self-learning. SIMUTÓRAX (developed at the University of Salamanca) is an application oriented to the study of the thorax. The content of this simulator it`s based on didactic material (organ dissections, drawings, images, sections, ...) that will help students to better understand the subject of Human Anatomy III, which refers to splanchnology and allows them to approach the clinic by real radiological images or auscultations sounds. The goal of this study is to analyze the possible benefits that SIMUTÓRAX can bring to 2nd year medicine students of the UPV/EHU.

For this purpose, we have translated SIMUTÓRAX into Basque language.15 days after having taught the subject of Human Anatomy III, this was made available to students, who could navigate freely, without a time limit. Thereupon, a questionnaire was carried out where different aspects of SIMUTÓRAX platform and its content were evaluated.

The results revealed that students agree on the easy access and navigation to the platform as well as the logical sequence of the sections that make up SIMUTÓRAX. In addition, this didactic tool helps to identify anatomical structures and provides relevant clinical information. Thus, SIMUTÓRAX helped students to understand in more detail the theoretical and practical concepts taught in the lessons and they believe that it could be applicable for the study of other body cavities.

P35 - ENHANCING ANATOMY EDUCATION THROUGH 3D PRINTING TECHNOLOGY: THE 3D-ANAT-UGR PROJECT

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The advancement of 3D printing technology has provided new opportunities to improve the teaching of anatomy in the medical degree. Specifically, the printing of 3D anatomical models allows for customization and adaptation of models that highlight key structures, pathologies, or even simulate complex clinical cases. This offers more focused and relevant teaching, enabling students to acquire practical skills for their future medical practice. Another advantage of 3D printing anatomical models is the ability to reproduce rare anatomical structures that are difficult to obtain from commercial sources, as well as pathologies or anatomical variations that are rarely seen in real cadavers. Through 3D printing, these structures can be accurately replicated for study, using computed tomography and magnetic resonance imaging of anonymized patients. This expands access to anatomical learning materials and promotes a deeper understanding of anatomical diversity.

In this context, the University of Granada has developed the 3D-ANAT-UGR Project to implement this technology in the training of future medical graduates. Within this project, specialized training will be provided to teachers in the field, focusing on medical image segmentation and the proper utilization of 3D printers. The incorporation of 3D models will offer students a hands-on, interactive, and personalized learning experience, thereby enhancing their comprehension of human anatomy.

P36 - FOOT DISSECTION AS A KEY LEARNING STRATEGY IN THE TRAINING OF PODIATRY STUDENTS

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In the field of Podiatry, it is essential to understand the anatomical structures of the foot to effectively treat podiatric conditions. Traditional teaching methods based on lectures and memorization of static learning materials limit active participation and practical understanding. Therefore, we implemented a methodology based on a "learning by doing" approach through foot dissection activities in the laboratory. Students enrolled in the "Anatomy of Lower Limbs" course at Miguel Hernández University in Elche completed four dissection sessions (2 hours each, pair work). Guided by experienced faculty, the students explored different structures of the foot using preserved specimens prepared according to the Thiel method, which maintains the flexibility and lifelike appearance of the body, allowing for a better anatomo-functional analysis of the foot. Upon completion of the sessions, 58% of the participants responded to an anonymous ad hoc satisfaction survey, showing a high level of satisfaction with the foot dissection activities (97.5%) and fulfillment of expectations (96.4%). Furthermore, most students reported that the activities facilitated the expansion of anatomical knowledge and the acquisition of surgical skills (93%). However, although the duration of the sessions seemed appropriate to most students (82.1%), some suggested extending them. This practical approach strengthens the anatomical knowledge and technical-surgical skills of first-year Podiatry students. It also fosters increased participation and confidence, enabling them to effectively tackle clinical challenges and excel as competent professionals.

P37 - GAMIFICATION, A TEACHING TOOL TO IMPLEMENT IN ANATOMY PRACTICES

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The subject Human Anatomy in the Nursing Degree at the University of Cádiz has always included a theoretical vision of structures and a fundamental practical aspect. The last one is organized around bones and anatomical models in which structures have to be identified with the help of practice scripts. This often becomes exhausting for students due to handling technical language and having to bring theory up to date causing them to attend practices with a loss of interest and without prior preparation of the scripts.

To avoid this, MOODLE's ONLINE "Games" tool located in "Virtual Campus" allows the use of techniques that transfer game mechanics to the educational field or "gamification". Stimulating through games the previous preparation of the scripts. To evaluate this concept we have a group made up of those enrolled in Anatomy at the Faculty of Cádiz, who use the tool, and another group made up of those enrolled in the Faculty of Jerez de la Frontera. That he did not use it.

The results showed 25% of the students have got better results in the subject in which the "gamification" activities had been carried out compared to their control, but also 12% of students showed more attendance at practical classes in the group that incorporated them. We can conclude that the "gamification" stimulates through the game and the competition the preparation of the practices being a very useful tool to bring the study of the subject up to date.

P38 - INTERACTIVE ATLAS FOR THE MORPHOLOGICAL STUDY OF HUMAN EMBRYO DEVELOPMENT

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An interactive atlas was designed to study embryonic development using histological sections of human embryos at different weeks and stages as support for the Human General Anatomy and Embryology course in the Medicine Degree. After digitizing the samples, interpretation, localization, and description of the different structures observed in the sections were performed. The application included a self-assessment section

with corresponding feedback to inform students of lessons that required extra reinforcement. Additionally, a glossary was designed to complement specific structure searches. To complete the atlas, images of adult human tissues were included, highlighting the changes that occur during development. ActivePresenter (ATOMI) software was used to design the application as it allows the creation of SCORM packages to be directly embedded in the Moodle platform of the University of Salamanca. Finally, students' perceptions regarding the use of the application were evaluated using the System Usability Scale (SUS), analyzing its efficiency, effectiveness, and usability. A score of 85.5 ± 9.92 (mean ± SD) out of 100 was obtained, indicating that the design of the different scenarios and navigation within the application are suitable for the students.

This work is part of the Teaching Innovation Project "Atlas interactivo para el estudio morfológico del desarrollo del embrión humano: desarrollo del sistema nervioso y aparato digestivo " (ID2022/137).

P39 - POST-COVID EDUCATIONAL INNOVATION IN CRANIAL ANATOMY PRACTICES

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The pandemic forced to modify the cranial anatomy practices of the first course of Dentistry at the University of Barcelona. Bricolage (creative use of alternative material) was applied to the Skull Anatomy practices in a flipped classroom format. The protocols and bibliography were available in the Virtual Campus from the beginning of the school year, and the learning objectives worked on in previous practices were presented by small groups to the rest of the class. The disposable material and the presentation of the students made possible to maintain the distances and the regulatory safety standards. The practical test was the same as in previous courses. Grades were subjected to descriptive statistics (Mean of the practical grades classified as very low (<2.5), fail (from 2.5 to 5), pass and good (from 5 to 7.5) and excellent (>7.5)).

The average grades obtained in the three courses in which the new methodology has been applied have increased from 6.59 in 2019/20 to 7.57 in 2022/23. The number of excellent grades has increased from 49 to 70, while the number of passes and fails remains stable.

Flipped learning and Bricolage (Field et al., 2017) improve the understanding of complex anatomical concepts (Chimmalgi et al., 2019) such as cranial anatomy, essential for Oral health procedures (Savoldi et al., 2021). Student's engagement enhances the learning experience as well as transversal competences, often assessed using simulation systems (Muriel-Fernández et al., 2019). In conclusion, the combination of flipped classroom with Bricolage favors the understanding of complex anatomical concepts.

P40 - PROJECT BASED LEARNING: FROM DIAGNOSIS TO SURGERY WITH EMPHASIS IN ANATOMY; AN EFFECTIVE DIDACTIC STRATEGY AS PART OF THE SUBJECT HUMAN ANATOMY III (SPLANCHNOLOGY) IN THE DEGREE OF MEDICINE OF THE UNIVERSITY OF THE BASQUE COUNTRY (UPV/EHU)

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Problem-based learning methodology which focuses on the resolution of clinical cases, has been widely used in anatomical teaching. Alternatively, project-based learning (PBL) is a dynamic classroom teaching method which involves students in solving real-life problems. In the present project, we wanted to take a step forward by joining these two types of methodology into one, bringing the student closer to clinical surgical practice in view

of integrating anatomical knowledge with pathology to a real application carried out in corpses. PBL was applied in seminars´ modality in the subject Human Anatomy III concerning splanchnology of the second course of the medical degree.

The main objective was to deepen the knowledge to reach the diagnosis considering the signs and symptoms shown by the patient and the surgical technique that should be applied as a treatment in each clinical case. In three successive seminars students received the support of surgeons from the Gurutzeta University Hospital who resolved students´ queries regarding the clinical cases. In the last seminar, each group of students carried out the surgical intervention on their specific clinical case (previously explained in seminar II), performed on a human corpse with the hands-on supervision of surgeons.

Students agree that everything learned has provided additional positive information both for the reality that the cases reflect and the applicability of the surgical techniques learned on human corpses. Additionally, they valued the surgeon´s work as essential for the correct project development and assumed that this PBL could be applicable in forthcoming courses.

P41 - SOCIAL NETWORKS AND GAMIFICATION AS A COMPLEMENT TO TEACHING AND LEARNING IN HUMAN ANATOMY

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In recent years, there has been a significant change in the use of digital applications, which has been reflected in healthcare and academic fields, given the new clinical and socioeconomic challenges. In this new environment of hyperconnectivity, immediacy, and abundance of resources, it can be relatively difficult for first-year students to find truthful, quality information, and to keep interest and attention in the classroom. Thus, the general objective of this project has been to apply digital strategies and complements to teaching and learning human anatomy. Specific objectives have been derived, such as: adding anatomy content on social networks, creating gamification activities applicable both inside and outside the classroom, and encouraging participation in activities. Content has been created on the instagram channel @fisioanatomistas, in relation to the agenda seen in class. Additionally, as a pilot experience, gamificated questionnaires and RPG/escape room style minigames, among others, have been created and presented. To evaluate this, assessment of students has been taken into account. Of the students surveyed, between 82.6 and 91.3% have visited and consulted @fisioanatomistas content. Regarding complementary activities, 91.3% have found them useful both inside and outside the classroom. Regarding subjective perception, the students stipulate that these activities have increased their participation in the classroom and have increased their interest in the subject. Given these results, we can conclude that both the generation and dissemination of anatomical content on social media, as well as the creation of gamificated complementary activities, is a positive and interesting experience for students.

P42 - STUDYING HUMAN ANATOMY BY SIMULATING A TV PROGRAMME

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Keeping students attentive and motivated during the theoretical and practical sessions of a subject is one of the difficulties we face in today's teaching environment. For this reason, new teaching tools must be considered to capture the attention and encourage student participation and motivation, where game-based learning (GBL) appears as an alternative that allows us to achieve this objective.

The objective was to use games to improve student participation and motivation in the practical sessions of Human Anatomy II (Splanchnology) in the degree of Medicine at the University of Zaragoza, with the participation of 78 students enrolled in the course. To carry out the activity, the Genially tool was used, where a simulation of the TV programme "Ahora Caigo" was carried out in which the students had to solve a series of questions correctly to avoid "falling" through the trap door.

The evaluation of this experience, carried out by means of questionnaires, showed 100% student satisfaction, emphasizing the increase in motivation (97%) and participation (95%) of the students in the development of the subject.

The use of the ABJ in the classroom makes the practical sessions of the subject more dynamic, improving the motivation and participation of the students in the development of these sessions.

P43 - TECHNICAL ASPECTS OF PROGRAMMING AN ANATOMY SIMULATOR TO SERVE AS A TEXTBOOK, PRACTICE SUPPORT AND ONLINE LEARNING FOR GRADUATE AND POSTGRADUATE STUDENTS

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One of the greatest difficulties for our students in the teaching-learning process is the handling of truthful information and the difficulty of textbooks, along with the great flow of information we can access online.

Through Active Presenter® software, it is possible to carry out simple programming to create interactive materials and not just video content. The result of said programming can be a SCORM package posted on teaching platforms (Moodle®, for example) or for direct observation of HTML5 on websites or social networks. Access is simple and intuitive on computers, tablets, or smartphones with different operating systems.

These teaching tools also make it possible to establish the basic and theoretical knowledge necessary for continued postgraduate training courses, with the advantage of online learning, such as pacing the study of its contents and not being necessary to go to the classroom in person.

Our Anatomy Simulator for e-learning is one more tool to be implemented within the ones that allow the acquisition of the necessary skills, and it does not replace the rest of the teaching methodology given in the Faculties of Medicine. The results obtained after implementing the Thorax Anatomy Simulator (SIMUTORAX) at the Faculty of Medicine (University of Salamanca) showed that the success rate of passing the subject increased from 70% to 89%, and the rate of attendance to ordinary exams increased from 72% to 97%. Overall, 95.67% of our students found the SIMUTORAX to be useful for their studies and helped them learn Human Thorax Anatomy.

P44 - TECHNOLOGICAL INNOVATION IN ANATOMY PRACTICES: COLLABORATION WITH THE TRAUMA SERVICE AND USE OF AUGMENTED REALITY GLASSES

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To improve the teaching-learning process, faculty's digital skills and to increase vertical coordination among professors, innovative practices have been carried out by developing a useful resource for online, blended or face-to-face teaching: augmented reality glasses. 30 participants have been coordinated, 6 from the Human Anatomy and Embryology Area and 24 from the Medicine Area (clinical associates or collaborators).

During the academic years 21-22 and 22-23, surgical approaches on corpses were included in the practices using augmented reality glasses. During the lower and upper limbs modules, clinical specialists integrated the surgical with the anatomical content. The students observed the technique both in situ and on the different screens in the dissection room.

The grades of the practical exams related to these topics were analysed in these groups: pre-pandemic (0), face-to-face pandemic (1), online pandemic (2) and the two courses in which the new resource was used (3 and 4). Moreover, anonymous surveys were conducted for students and clinical specialists.

The results show that the use of this tool has no influence on improving qualifications, however the level of expertise on its use is a factor worth considering. It seems that face-to-face versus online learning could favor the academic level in the course. The surveys show that using this tool has strengthened the coordination among basic and clinical faculty, has fostered transversal coordination in the degree, has increased interest in the course and in the content understanding, and has allowed students to connect the content of both the basic and clinical courses.

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P45 - THE DRAMATIZATION IN THE STUDY OF ANATOMY AND HUMAN EMBRYOLOGY CASES AS A STRATEGY FOR COLLABORATIVE AND APPLICATIVE LEARNING. CONSIDERATIONS OF THE MEDICAL STUDENTS

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The study of cases in Anatomy facilitates the relation of the theoretical concepts with reality, generating in the students a significant capacity for analysis, interpretation, and utilization of knowledge concepts for promoting substantial learning. In addition, the role-playing strategy improves students´ skills in the knowledge application to concrete circumstances and benefits collaborative team working. We present the student's opinions about an activity developed during the course 2019/20 in the subject Anatomy I in The Faculty of Health Sciences of the ULPGC. The experience was focused on case studies in embryology using dramatization in its presentation. The students presented cases assuming distinct roles as physicians, patients, or relatives.

The student's opinions concerning this activity were recorded employing a questionnaire with ten closed questions using a Likert scale to value the answer and one open question. 120 participants filled out the questionary, representing 94% of the students of the course, 26% males, and 74% females.

The students generally considered that the representations helped apply the knowledge about embryology learned in the class to the cases and preferred presenting the subjects studied this way. However, the lower values in the scales were obtained concerning maintaining attention when the classroom mates exposed their case studies and feeling comfortable with the role taken during the case studies presented. Due to the personal interaction required, applying the strategy during the pandemic years wasn't easy. The method could be a tool for learning; however, more studies about its efficacy should be carried on.

Sector 4 – Teaching and Education in Anatomy, Others

P46 - THE USE OF ANATOMICAL DISSECTION VIDEOS IN MEDICAL EDUCATION

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Acquiring a deep knowledge of the structures and systems of the human body is a fundamental basis in the syllabus of medicine, as well as in other grades related to health sciences. Traditionally, the learning of anatomy implied both, theorical master classes reinforced with practical sessions based on cadaveric dissection. However, the outbreak of the pandemic Covid-19 in March 2020 generated the development of different e-learning

tools to cover the deficiencies caused by the lock down. In fact, new technologies based on audiovisual techniques were massively used, replacing the face-to-face teaching. In agreement with this, we created audiovisual materials as an accessory tool for a deep and complete study of each system of the human body. In this sense, we first performed the dissections that are part of the syllabus of splanchnology for the Bachelor of Medicine and then recorded and edited videos that were uploaded in the MMedia portal of the University of Valencia. Since then, those videos have been available for all the first-year students, not only for the Bachelor in Medicine but also for other related degrees such as Pharmacy or Physiotherapy, as they are in an open-access platform to all the students of the University of Valencia. We consider that this online material serves the student to gain a better understanding of the practical session that he/she is going to prepare (as a flipped classroom material), and more importantly to review the practical content prior to the evaluation exam.

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P47 - THE USE OF THE COMPLETE ANATOMY APPLICATION AS A TEACHING TOOL IN DEGREES OF HEALTH SCIENCES

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University students are familiar with the use of technology both inside and outside of the classroom. For this reason, from the Department of Anatomy of the Miguel Hernández University of Elche, we decided to include the use of a specific anatomy app in degrees of health sciences. Our project focused on the use of the Complete Anatomy app, a tool developed for the study of anatomy in three dimensions. Thanks to this technology we seek to promote proactivity, student participation, and interest in the subject.

The study population (n=114) focused on students enrolled in the subject "Human Anatomy I" in the first year of the Physiotherapy Degree (2022-2023 academic year). The teaching experience included ten practical sessions. During these sessions, the students had access to the app from their personal electronic devices, as well as two touch screens incorporated in the practice room. After the completion of the project, the students had to prepare and deliver a document with all the anatomical structures identified. The qualifications of these works were included in the continuous evaluation.

To assess the experience, each student individually completed an anonymous satisfaction survey. The results showed that more than seventy percent of the students stated that they considered Complete Anatomy as a good anatomical learning method.

In conclusion, Complete Anatomy has been a successful didactic tool that allows the continuous evaluation of anatomical content, improving teaching quality and the proactivity of Physiotherapy students.

P48 - USE OF 3D PRINTING MODELS IN THE PRACTICAL TEACHING OF ANATOMY: FROM THE CT-SCAN TO THE CLASSROOM

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The teaching of anatomy in Medicine, Physiotherapy and Nursing has been based on theoretical lessons that are integrated through practices that use different resources: Bones, plastic models or 3D anatomy programs. Usually the practical study of splanchnology has had the use of corpses as its axis. This constitutes a problem given its limited number and high number of students in the different grades. In addition, for Physiotherapy and Nursing students, the necessary resources are centralized in the Faculty of Medicine. A different center located even in another population in some cases. An answer to this problem came from the preparation of parts by additive printing

corresponding to the anatomical models obtained from DICOM files generated by CT scans in patients.

Thus, the pieces were printed and evaluated for practical teaching. These were incorporated into the practices in the groups at the Faculty of Nursing in Cádiz, taking the groups from Jerez de la Fra. as control. Observing a higher percentage of success in the questions of the splanchnology exam in the students who used the 3D pieces, also a higher degree of attendance at practices and a decrease in requested tutorials. We conclude that the additive printing of pieces from DICOM files is a viable source for obtaining didactic material for anatomy practices, providing a high informative and educational value related to real anatomical details.

P49 - VASCULAR COLOURED LATEX INJECTION AS A FEASIBLE FACILITATOR OF DISSECTION AND DEEPER LEARNING OF ANATOMY OF THE HAND

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Comprehensive knowledge of anatomy is the centrepiece for good results at hand surgery, maximizing success and minimizing complications. Nevertheless, understanding the vascular anatomy of the hand is challenging for medical students and residents. The best teaching method is careful dissection of human cadaveric specimens. Injection of the vascular system with coloured latex allows arteries and veins appear more prominently, resulting in substantial facilitation of dissection. In this pilot study, four formalin-fixated cadaveric specimens underwent coloured latex injection of the vascular system of the hand at the sites of radial and ulnar artery and veins immediately before dissection. Tissue penetration of latex was excellent in all specimens and clearly improved malleability and vascular identification. A survey was performed among teachers (n=3), residents (n=24), and course students (n=60) comparing the feasibility of anatomical dissection and study between hands with and without latex injection. All teachers and medical residents and 55% of the students (n=33) returning the questionnaire agreed that this technique improved the quality of hand dissection and facilitated their anatomical study. We consider that injection of coloured latex, reaching small calibre vessels, and giving tissues greater malleability and flexibility, allows facilitated dissections and exposure, and is suitable to improve anatomy and surgery teaching. The method is fast and easy to perform on conserved specimens and affordable to establish in every teaching setting, be it in a dissection course, a training course for surgical specialties, or postgraduate training as recently applied in a workshop for anatomists with varying levels of experience.

P50 - ANATOMICAL TECHNIQUE. TRAINING AND ASSESSMENT OF COMPETENCES AND SKILLS IN AN OPTIONAL SUBJECT OF THE MEDICINE DEGREE

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The Anatomical Technique subject is part of Medicine Degree of the Universitat Rovira i Virgili. It is an optional practical subject where skills and techniques of dissection are trained.

The subject has a duration of 30 hours divided into 2 hours/week (3 ECTS). Each academic year 24 students are enrolled, divided by groups. They: 1) have an anatomical piece to dissect; 2) make a region study by plans and incisions; 3) learn dissection techniques; and 4) prepare and present a final project. The subject evaluation consists of: a) 60% daily work: through an evaluation guideline (54% teachers and 6% classmates); b) 40% final project: 5% abstract, 15% report, 20% oral presentation through an evaluation guideline (18% teachers and 2% classmates). The present subject is also assessed by the students.

The Anatomical Technique subject trains different skills and abilities such as: 1) encourages participation, 2) helps to establish knowledge of theory, 3) works on autonomy in dissection, self-management of the dissection room, etc. Due to the high demand for this subject, students with the best grades from previous courses are enrolled. Furthermore, this subject is rated excellent by students every academic year. Moreover, all students who participated achieved ≥9 due to the excellent work done.

The Anatomical Technique subject is an example of the evaluation of transversal skills that are trained throughout the Medicine degree. This subject has excellent results from both students and teachers.

P51 - A CONTRIBUTION TO THE MECANOBIOLOGY OF THE HUMAN GENITOURINARY SYSTEM: DISTRIBUTION OF PIEZO MECHANOGATED ION CHANNELS

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The mechanotransduction molecules and cell types that function as flow of luminal content, stretch of walls and pressure detectors in the urinary tract mostly remain unknown. Piezo1 and Piezo2 ion channels are essentially required for mechanotransduction in nervous and non-nervous cells in mammals, including the urogenital system where they work as a sensor in both the urothelial as well as the innervating sensory neurons. Here we used immunohistochemistry to systematically analyze the distribution of both PIEZO1 and PIEZO2 in the human urogenital system. PIEZO1 and PIEZO2 immunoreactivity was found in the proximal/distal and collecting tubules of the kidney and in the epithelium and muscle layer of ureter. In the muscle layer of urinary bladder immunoreaction was not detected for both ion channels Piezo1 and 2. In the genital male organs PIEZO1 and PIEZO2 in the Sertoli cells of testis, ductus and acinus of the prostate. In the genital female system, PIEZO1 was found in oocytes and granulose cells of the ovary; the ciliated cells of the fallopian tubes expressed PIEZO2 more intensely than PIEZO1, while endometrium was only positive for PIEZO2. Both PIEZO1 and PIEZO2 were detected in the ovarian epithelium. All together present results suggest that PIEZO might participate in mechanobiology of the human urogenital system.

P52 - CHARACTERIZATION AND IMPROVEMENT OF CALCIUM PHOSPHATE NANOPARTICLES FOR MEDICAL USE

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Pancreatic cancer (PC) is a highly drug-resistant tumour, which makes it difficult to treat. In this context, poly-ADP ribose polymerase 1 (PARP1) is a relevant protein in chemoresistance in several types of cancer. In this work, the synthesis of calcium phosphate nanoparticles (ACP) encapsulating a PARP1 inhibitor (Olaparib, OLA) together with ascorbic acid (AA) has been performed. The nanoformulations were loaded with 13% OLA and 1% AA (NP-ACP-OLA-AA). Our results showed an interesting antitumour effect on three pancreatic cancer cell lines (PANC-1, Panc02 and MIA PaCa-2), matching or improving the effect of the free

OLA. In addition, induction of tumours in immunocompromised SCID-NOD mice from the PANC-1 cell line showed that the mice group treated with NP-ACP-OLA-AA had lower tumour volume and longer survival compared to the free drug. This greater effect *in vitro* and *in vivo* is due to the gradual release of both compounds generated by their nanoencapsulation, protecting them from degradation and maintaining a controlled release of Olaparib for 72 hours. Analysis of *in vivo* samples shows that the NPs are able to efficiently reach tumours, generating an effective pro-apoptotic effect leading to cell death. Therefore, these NP-ACP-OLA-AA are shown to be a possible effective therapy, highly biocompatible and with great biodegradability compared to other alternative ways of administering OLA, producing a high induction of apoptosis and decreasing tumour growth.

This work has been carried out with funding from the Instituto Carlos III through the PMPTA22/00136 Project (FEDER).

P53 - CORRELATION BETWEEN INTERNAL BONE STRUCTURE AND SOFT TISSUE IN PRIMATES: A PRELIMINARY STUDY IN CHIMPANZEES AND HUMANS

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In 1980, Burr made observations suggesting an association between cortical bone structure in primates and their mode of locomotion. Experimental evidence supports the idea that trabecular bone responds to mechanical loads experienced throughout life in terms of magnitude, frequency, and direction. Although non-functional factors can also influence trabecular structure, comparative studies have demonstrated consistent correlations between trabecular structure variation and differences in primate locomotor behavior. Considering the inverse relationship between the relative mass of ligaments and periarticular muscles in the wrist region, associated with locomotion, in chimpanzees and humans, a study was conducted to explore the possible correlation between soft tissue anatomy and internal osteological structure in both species. A preliminary study was conducted, examining ten CT scans of distal radial epiphyses in chimpanzees and humans. The ratio between cortical and trabecular bone was quantified to identify potential differences. The results revealed significant species-related differences in the distribution of soft tissue proportions. These preliminary findings suggest a potential correlation between soft tissue anatomy and internal osteological structure in chimpanzees and humans. Further studies with larger sample sizes and more detailed analyses could provide a more precise understanding of these correlations and their implications for primate locomotion.

P54 - GASTRIN: A NEW BRANCH OF THE GASTRO-PANCREATIC AXE TO EXPLAIN SLEEVE EFFECT ON GLUCOSE METABOLISM

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Within bariatric techniques stands out due to its efficiency the sleeve gastrectomy (SG). It's well known the role of the stomach as secretory organ of many substances related to insulin secretion. These include gastrin, secreted mainly in the antrum. It induces insulin release in isolated pancreatic islets limiting somatostatin-14 (SST-14) intra-islet release and have been associated to blood glucose level improvement in diabetic models after SG. A paradoxical situation taking into account that SG involves a gastric resection along the great curvature.

To determinate the role of gastrin in glucose metabolism improvement after SG with the help of a gastrin antagonist such as Netazepide, in n=12

Sham-operated; n=12 SG-operated and n=12 SG-operated /Netazepide-treated Wistar rats, we compared medium and long-term plasma insulin, Oral Glucose Tolerance Test (OGTT) and plasma gastrin. Also gastrin expression in the gastric remnant and Beta-cell mass.

SG induced a medium-term elevation of insulin response and plasma gastrin levels without modification of OGTT results. However a long-term depletion of insulin response with elevated OGTT AUC and plasma gastrin level appeared after SG. Netazepide prevented SG effect on these parameters. Gastrin tissue expression was greater in SG than in SG-Netazepide treated or control animals. Beta-cell mass was less in SG than in controls or SG-Netazepide groups. As conclusion Gastrin plays a central role in glucose improvement after SG. It stimulates a medium-term strong insulin response but also leaves to a long-term beta-cell depletion and a loss of insulin response. This is prevented by gastrin antagonist as Netazepide.

P55 - 3D GEOMETRIC MORPHOMETRIC STUDY OF THE TEMPOROMANDIBULAR JOINT IN CHIMPANZEES AND HUMANS

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Several studies have investigated the relationship between the feeding behavior of large primates and the structure of the temporomandibular joint (TMJ), demonstrating a close connection between the two. The TMJ plays a crucial role in the process of chewing by enabling the transmission of forces between the jaw and the skull. Various functional models have theorized about the importance of the size of the articular surface of the TMJ in relation to the sliding movements that occur during chewing. However, until now, little attention has been paid to the morphological complexity of this surface. Building on a previous study conducted by our team, which characterized the morphology of the temporomandibular joint in common chimpanzees and modern humans, we decided to carry out further research using geometric morphometrics. The objective was to analyze the surface of this region and determine if there are differences between species and sexes. The results of our study revealed significant differences between chimpanzees and humans in terms of the surface of the temporomandibular joint. However, no significant differences were observed at the level of sex in any of the species studied. The findings obtained through geometric morphometrics showed that the differences between chimpanzees and humans were reflected in the Procrustes distances and in the T-square analysis after 1000 permutation tests. In conclusion, our study demonstrated changes in the morphology of the articular surface for the temporal bone of the mandibular condyle between chimpanzees and humans. These changes were characterized by an alteration in the arrangement of the joint's concavities. Additionally, significant differences were found between the two species, but no differences based on sex were observed. These results provide valuable information about the evolution of the temporomandibular joint and its relationship with feeding behavior in primates.

P56 - PERLIPIN-1 HAS A PROTECTIVE ROLE IN LUNG FIBROSIS: INVOLVEMENT IN THE DIFFERENTIATION OF MYOFIBROBLASTS

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Pulmonary fibrosis is a chronic progressive lung disorder in which the walls of the alveolus undergo inflammation and fibrotic thickening resulting in respiratory failure. The cells producing those extracellular matrix components are myofibroblasts. Myofibroblasts are mainly derived from fibroblast activation but also from epithelial and endothelial cells (via EMT/endoMT), or pericyte o fibrocyte differentiation. In recent years, lipofibroblasts, fibroblasts filled with lipid droplets, have been postulated as a precursor of myofibroblasts. Perilipin-1 (PLIN1) is a protein associated with intracellular lipid droplets and involved in lipid metabolism and storage. Our hypothesis is that PLIN1 has a main role in the differentiation of lipofibroblasts to myofibroblasts and the progression of fibrosis. We have seen that PLIN1 is overexpressed in human fibrotic lungs and its inhibition in vitro increases the differentiation to myofibroblasts and the deposition of collagen, suggesting a protective role in the development of fibrosis. In primary lung fibroblasts, PLIN1 shuttles to the nucleus after a fibrotic stimulus, which could show an alternative nuclear function for PLIN1 repressing the differentiation to myofibroblasts and the expression of profibrotic genes.

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P57 - RENAL PROTECTIVE EFFECT OF VALSARTAN IN AN EXPERIMENTAL MODEL OF ARTERIAL HYPERTENSION

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The kidneys play a crucial role in maintaining blood pressure within healthy limits, and conversely, blood pressure can impact the health of the kidneys. Elevated blood pressure, also known as hypertension (HT), can cause kidney damage and lead to chronic kidney failure (GKD). Aquaporins (AQPs) are water channels involved in water reabsorption, and urine concentration, and contribute to the regulation of blood pressure. The main objective of this study is to investigate the effects of a type 1 angiotensin II (AT1) receptor blocker (Valsartan) on the expression of AQPs and its impact on blood pressure regulation. Kidneys from Wistar Kyoto rats (WKY), spontaneously hypertensive rats (SHR), and SHR treated with valsartan (SHR-T) were analyzed to study the expression of AQP1, AQP2, AQP3, and AQP4 using immunohistochemical techniques. Higher expression of AQPs was observed in SHR compared to WKY, except for AQP4, which exhibited decreased expression compared to WKY rats. Conversely, hypertensive rats treated with valsartan showed reduced levels of AQPs, similar to the control group, except for AQP4, which remained similar to WKY rats. AT1 receptor blocker drugs used to treat hypertension in the kidneys decrease the levels of AQPs, except for AQP4, resulting in reduced water reabsorption and lowered blood pressure. These changes in renal hemodynamics provide evidence of a renal protective effect.

P58 - ROLE OF CALPAINS IN THE PRO-INFLAMMATORY RESPONSE OF THE MAMMARY GLAND AFTER LACTATION

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It has been generally accepted that during mammary gland involution after lactation there is an inflammatory response that generates a protumoral environment. Indeed, short lactation and abrupt weaning have been shown to generate pre-neoplastic lesions in mouse mammary glands. Both conditions largely reproduce human lactation habits in developed countries. Among the signaling pathways involved in this process, iNOS and NFB activation are part of the pro-inflammatory environment induced in the mammary gland after forced weaning of pups. NFB modulates the expression of calpain-1 and -2, which

play a crucial role both for the involution of the mammary gland and for neoplastic development. Calpains could also have a pro-inflammatory role, hitherto unproven in the mammary gland. To determine the proinflammatory and profibrogenic role of calpains 1 and 2 during involution, WT and iNOS-KO mice were used at the peak of lactation and at different times after weaning. Calpains were studied as potential effectors of iNOS activity, as propagators of the inflammatory response, and as mediators of collagen deposition in the extracellular matrix. NFB activation at 24-48h weaning is delayed in iNOS KO mice and calpains are not significantly induced. Calpains and iNOS could be part of a key autoregulatory loop for the formation of the proinflammatory environment and collagen deposition that occurs in the mammary gland after abrupt weaning of the pups.

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P59 - THE SUBLINGUA OF *LEMUR CATTA*, A MORPHOLOGICAL STUDY

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The sublingua is an anatomical structure located below the tongue described in *Lemurs* as an instrument for cleaning the "dental comb" (modified lower incisors and canines) although its role has not been stablished clearly. Comparative studies of macro and microanatomy in primates are scarce and incomplete causing a deficit of morphological data in order to better interpret the possible functions of the structures analyzed. Here we studied 6 specimens of *Lemur catta* obtained through the donation of naturally dead animals from Spanish zoos. This specie belongs to *Lemuridae* family which presents troubles for survival in their natural habitat; this fact adds value to the study because it contributes to the morphological characterization of threatened animals. We used histochemical staining techniques together with scanning electron microscopy (SEM) to microanalyze the surface of the sublingua. Images show formations like mechanical papillae, distributed in the whole organ in youngest specimen whereas there was a remarkable reduction in the anterior part of the organ in the oldest animals. Furthermore, differences were noted between males and females in the morphology of the tip of sublingua. Finally, we also observed in the ventral surface of the sublingual specific areas with micropores filled with an amorphous substance. Microanalysis of these substances revealed a high concentration of iron. The new data obtained on the morphology of the sublingua add more information of Lemur ´s morphology and point for possible additional functions for this peculiar structure present only in some species of primates.

P60 - WHAT WAS A ROMAN LEGIONARY OF 2ND CENTURY CESARAUGUSTA LIKE?

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Aragon is the result of the mark left by all those who have inhabited our Autonomous Community throughout history. One of the most important traces in the history of Zaragoza dates back to the early years of the 1st century when the Romans settled on the banks of the river Ebro and named the city Caesaraugusta, in honour of the Roman emperor Caesar Augustus.

From excavations located in one of the necropolises on the ancient western outskirts of the city of Zaragoza, bone remains belonging to 12 male individuals were found.

Anthropological and imaging studies have been carried out on these remains to determine the morphometry and lifestyle of these individuals, and the mark they left on the western population, and on Zaragoza in particular.

The results show the youth and physical appearance of this that coincide with those recorded in history about the appearance and physical condition of the men who joined the Roman Legios.

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