CURRICULUM VITAE CONCEPTUAL y PUBLICACIONES

1965-1971-Granada- Estudios de Medicina. Introducción a la neuroembriología y a la neuroanatomía comparada como colaborador del Prof.J.Mª.Génis Gálvez (último curso). Breve periodo con el Prof.Ortiz Picón (Histología) estudiando técnicas neurohistológicas de Cajal y Rio Hortega.

1971-1976-Sevilla- Becario, ayudante y contratado. Prosigue la formación en investigación neuroembriológica con el Prof.Génis Gálvez trasladado a Sevilla. Estudios sobre el desarrollo del núcleo oculomotor y, en particular, de su migración neuronal. Tesis doctoral sobre desarrollo del núcleo intersticial de Cajal (1973). Aprendizaje de técnicas histoquímicas y microscopía electrónica. Estancia postdoctoral en Paris para aprender técnicas de cultivo organotípico del sistema nervioso y microscopía electrónica (INSERM U106 -A.Privat). Contacto con C.Sotelo (mismo laboratorio), quien le introduce al método de Golgi. A la vuelta, estudios sobre el desarrollo de la retina y del lóbulo óptico en el pollo (diferenciación y migración neuronales). Comienzo de estudios sobre el desarrollo diencefálico. Algunos trabajos sobre el mesencéfalo in vitro y sobre el efecto de los rayos X sobre el neuroepitelio y la migración del núcleo oculomotor. (**2 publicaciones**).

1976-1977-Badajoz- Contrato como catedrático de Anatomía. Trabajos con método de Golgi sobre el lóbulo óptico (diferenciación de sus 14 tipos de neuronas y la oligodendroglia), núcleo oculomotor (propone una hipótesis quimiotáctica de su migración, en relación con poblaciones catecolaminérgicas), retina y núcleos ístmicos. Insatisfacción con el modelo columnar del diencéfalo, por su incapacidad para encuadrar los datos obtenidos. Primera lectura de las teorias segmentarias de principios de siglo, que postulaban sistemas de coordenadas intrínsecas según ejes dorsoventral y anteroposterior para la interpretación de la histogénesis neural. Estudio amplio de la literatura neuroembriológica clásica alemana e inglesa/americana. (**3 publicaciones**).

1977-1980-Cádiz- Profesor agregado contratado y luego adjunto por oposición y catedrático agregado numerario (1979) en comisión de servicios. Ultimos estudios con técnica de Golgi (retina, mesencéfalo, diencéfalo, istmo; tesina de M.Martínez de la Torre, 1978; tesis de C.Zabala, 1978 y de C.Bendala, 1978). Estancia en el Max Planck Institut für biophysikalische Chemie de Göttingen, con G.Rager (aprendizaje técnicas de transporte axonal) e interacción con O.Creutzfeldt y J.C.Eccles (neurofilosofía). Primeros estudios histoquímicos sobre los patrones generales de diferenciación de neuronas, usando el mapeo de acetilcolinesterasa como marcador neuronal temprano y testando los modelos columnar y segmentario del diencéfalo y rombencéfalo. Estudio de literatura sobre quimioarquitectonia y patrones neurogenéticos (autoradiografía con timidina tritiada). Primeras nociones sobre la necesidad de un planteamiento embriológico de los problemas comparativos, así como de un tratamiento causal correlativo del desarrollo (inspirado en las obras de Cajal, el concepto de Bauplan de Kuhlenbeck y los estudios de la Escuela Neuromérica nórdica -Holmgren, Palmgren, Rendahl, Bergquist, Källén, Vaage). Mapeo topológico de las columnas nucleares rombencefálicas en un pez cartilaginoso, según Nieuwenhuys (tesis de M. Abdel-Hadi Rashid). (**7 publicaciones**).

1980-1987-Murcia- Catedrático agregado por oposición; paso a catedrático titular por decreto ministerial (1983). Montaje del laboratorio, incluyendo secciones de neuroembriología experimental y autoradiografía para estudio de neurogénesis. Nueva colección de embriones de pollo. Series comparativas de cerebros de anfibios, reptiles y mamíferos (tesis de M.Martínez de la Torre y MªCaballero Bleda). Iniciación de estudios de embriología experimental (neuroporo anterior). Inicio colaboraciones con C.Mª.Trujillo (La Laguna) sobre embriones de lagarto. Estudios sobre la organización segmentaria temprana del rombencéfalo (tesis de J.A.Amat) y del diencéfalo (tesina de M.Guillén). Los estudios previos en Cádiz culminan en Murcia en 1987, con la publicación del **modelo neuromérico diencefálico en el pollo** (Puelles et al.,1987a,b). Tests del modelo en diversos trabajos de neuroanatomía comparada (comparación de cerebros embrionarios y adultos). Estudios experimentales sobre conectividad segmentaria de vias visuales en embriones y adultos (tesina y tesis de S.Martínez). Estudios autoradiográficos sobre nacimientos neuronales y proliferación segmental en istmo, mesencéfalo y diencéfalo. -Durante este periodo: cargos de vicedecano de Medicina y vicerrector de investigación de la Univ.Murcia, dotando de técnicos o laborantes por primera vez a los laboratorios universitarios, modernizando el servicio de publicaciones, creando una hemeroteca científica a imagen del Max Planck Inst. de Göttingen y diversos servicios comunes de apoyo a la investigación). (**8 publicaciones**)

1987-1993-Murcia- Exploración en mayor profundidad de las implicaciones morfológicas, comparativas y neuroembriológicas de la teoría segmentaria del neuroeje en reptiles, aves y mamíferos, avanzando en el empleo de técnicas histoquímicas e inmunocitoquímicas para la quimioarquitectonía, así como de técnicas de transporte o marcaje axonal para las conexiones; confirmación de los postulados segmentarios en relación al diencéfalo y constatación de la importancia de los marcadores neuroquímicos y la naciente biología molecular del desarrollo. Aprendizaje de la técnica de hibridación in situ en Paris (l'École Normale) y Madrid (Inst.Cajal). Simultaneamente progresan estudios de embriología experimental sobre segmentación neural en colaboración con S.Martínez, M.Martínez de la Torre y F.Marín. (**20 publicaciones**).

1993-2015-Murcia- El **paradigma segmentario** resulta impulsado a nivel internacional por su marcada consistencia con los novedosos **patrones de expresión de los genes que controlan del desarrollo neural**, que comienzan a ser estudiados en el ratón y pollo (linea continuada de trabajos en colaboración con J.L.R.Rubenstein en San Francisco desde 1992), o en la rana Xenopus (más tarde, con B.Ferreiro, A.Brox y L.Medina). A partir de aquí, aumento exponencial de las colaboraciones con otros laboratorios y los proyectos internacionales coordinados. Estudio del rol de las cadherinas, moléculas de adhesividad intercelular, en la maduración de centros y sistemas nerviosos dentro del modelo segmentario (con C.Redies, Essen, y M.Takeichi, Kyoto). Trabajos de neuroembriología experimental sobre el organizador ístmico y el mesencéfalo, rombencéfalo y prosencéfalo (extirpaciones, marcadores, mapas prospectivos y experimentos de inducción; análisis clonal; colaboración con S.Martínez, F.Marín, F.Cambronero; J.F.Nicolas del Inst.Pasteur en Paris y N.Le Douarin del CNRS en Gif-sur-Yvette).

Asimismo, estudios neuromorfológicos usando el modelo, acompañados sistematicamente con mapeos de marcadores moleculares y quimioarquitectónicos, dan lugar a avances en la comprensión comparada del cerebro en los vertebrados. Se proponen nuevos modelos de subdivisiones homólogas y nomenclaturas reformadas de diversas regiones cerebrales. Los estudios alcanzan ahora a mamíferos, aves, reptiles, anfibios y peces agnatos y gnatostomos (con L.Medina, S.Guirado y J.C.Dávila; F.J.Milán, M.Martínez de la Torre, M.A.Pombal, y M.Wulliman, Bremen y R.G.Northcutt, La Jolla). Se muestra la **validez del paradigma segmentario neural para todos los vertebrados, de la lamprea al hombre (concepto del modelo como Bauplan)**. Se añaden estudios específicos sobre el desarrollo segmentario del sistema catecolaminérgico y del sistema visual en reptiles, aves y mamíferos, estudios sobre segmentación conectiva del sistema de núcleos vestibulares en y sobre poblaciones GABAérgicas en el ratón (lineas transgénicas). Nuevas concepciones del tálamo, pretectum, hipotálamo y telencéfalo (palio y subpalio; en el 2000 se propone un **nuevo modelo del palio** en cuatro partes, que facilita la comprensión de la evolución de la corteza y del complejo claustroamigdalino). En el 2007 el modelo del subpalio en colaboración con Oscar Marín (inst.neurociencias Alicante). Estudios experimentales sobre **mapas prospectivos de placa neural temprana y tardía** en pollo (2002, 2004, 2009, 2012). Elaboración de un libro de texto de de neuroanatomía humana (con S.Martínez y M.Martínez-de-la-Torre) y un atlas detallado sobre el cerebro de pollo adulto (en colaboración con G.Paxinos, C.Watson, M. Martinez de la Torre y S.Martinez). Estudios genoarquitectónicos sobre el pretecho con J.L.Ferrán (2007, 2008, 2009). Nuevo modelo prosomérico del hipotálamo en 2012. Modelo neuromérico genoarquitectónico del rombencéfalo con F.Marín (2008, 2014) y A.Alonso (2012). Primer estudio del desarrollo del núcleo interpeduncular (2012). Desde 2008-2011, contrato como experto con el Allen Institute for Brain Science (Seattle, Washington, USA), para el desarrollo de un Atlas del Cerebro en Desarrollo del Ratón, acompañado de la expresión de 4000 genes, de dominio público <www.developingmouse.brain-map.org>. Como consecuencia, propuesta de una nueva Ontología global del sistema nervioso basada en el modelo (listando y catalogando según su origen embriológico unas 2500 partes del cerebro; 2013). Múltiples capítulos de libros internacionales. Descubrimiento del orígen embriológico del claustro, dentro del palio telencefálico (2014) y serie de trabajos sobre desarrollo del hipotálamo (2015) (**unas 198 publicaciones**).

IMPACTO

Los trabajos de neuromorfología molecular alcanzan un alto impacto internacional (TINS; Development; Neuron; J.Neurosci.; Ann.Rev.Neuroscience; Science; Dev.Biol.; MOD; Genes&Devel. -*el **modelo prosomérico** forma parte de los 10 temas de mayor repercusión futura en desarrollo neural seleccionados por los editores de Science en su número especial de 1994*). Según datos actuales del ISI Science Citation Index, el índice h por citaciones de toda la obra se eleva a 54 (uno de los 10 más altos entre los neurocientíficos españoles, y el primero entre los anatómicos y embriólogos).

RESUMEN

Esta obra ha logrado sugerir una nueva visión comprehensiva –*un nuevo paradigma*- de la estructuración progresiva del sistema nervioso de los vertebrados, en varios aspectos biológicos: la ontogenia, la evolución y la función. Promueve el nexo necesario entre el abordaje *molecular*, los estudios *experimentales* y el análisis *neuromorfológico*, abriendo nuevos panoramas a la fisiología de sistemas. Recientemente, radiólogos clínicos intervencionistas europeos descubren que los modelos cerebrales propuestos son de interés clínico, ya que predicen ciertos aspectos de la casuística en malformaciones arteriovenosas cerebrales en el hombre.

El paradigma de Regionalización Molecular Segmentaria Neural impulsado por L.Puelles y colaboradores permite entender y sistematizar: 1) los pasos tempranos en la especificación molecular y la diferenciación de los centros neurales, 2) la secuencia ulterior posición-dependiente de los fenómenos histo- y morfogenéticos que dan forma a la complicada estructura neuronal madura (proliferación, diferenciación, migración neuronal), 3) los mecanismos de guía de la navegación axonal en las diferentes vias, 4) ciertos aspectos del orden topográfico de las conexiones sinápticas que no dependen de la función (efrinas, cadherinas, etc), y 5) las diferencias funcionales entre distintos componentes de los sistemas funcionales. Todo ello, mostrando lo conservativo frente a las variantes evolutivas.

En esta vasta panorámica explicativa de las relaciones mutuas de las estructuras integrantes del Sistema Nervioso Central en sus diferentes niveles aparecen caminos atractivos a seguir en el futuro próximo, para profundizar en la urdimbre molecular y funcional del cerebro, alcanzando eventualmente en los próximos años una creciente significación clínica. Nuevos paradigmas que faciliten la comprensión del cerebro no surgen a diario.

La trayectoria en cuestión refleja asimismo una importante labor organizadora de laboratorios y de recursos de investigación en varias universidades, una intensa actividad docente en neurociencia de pre- y postgrado, continuada formación de investigadores nacionales y extranjeros, y un importante impacto científico sobre los investigadores coetáneos a nivel nacional e internacional.

PUBLICACIONES (total actual 233)

1975

1. The migration of oculomotor neuroblasts across the midline in the chick embryo. L. Puelles, F.Malagón and J.M. Genis-Gálvez. Experimental Neurology. 47:459-469/1975.

1976

2. Estudio de brotes capilares en formación en el interior del sistema nervioso central embrionario con el método de Golgi. L. Puelles. Anales del Desarrollo 20-49:89-91/1976.

1977

3. Inverted (displaced) retinal amacrine cells and their embryonic development in the chick. L. Puelles, F. Malagón and J.M. Genis-Gálvez. Experimental Neurology 56:151-157/1977.
4. Do oculomotor neuroblasts migrate across the midline in the fetal rat brain. L. Puelles and J. Privat. Anatomy and Embryology 150:187-206/1977.
5. Estudio histológico del proceso de formación de rosetas tras su irradiación en el sistema nervioso del embrión de pollo. L.Puelles y P.Román. Anales del Desarrollo 21-50:15-18/1977.

1978

6. A Golgi-study of oculomotor neuroblaste migrating across the midline in chick embryos. L. Puelles. Anatomy and Embryology 152:205-215/1978.
7. Diferenciación transitoria de melanocitos en el techo del istmo tronco encefálico en embriones de pollo. L.Puelles y M.Gil. Anales del Desarrollo 22-52:3-7/1978.
8. Cultivo organotípico del tegmento mesencefálico fetal. L.Puelles. Anales del Desarrollo 22-52:17-19/1978.
9. Efecto de las radiaciones ionizantes sobre la migración de los neuroblastos oculomotores del embrión de pollo. L.Puelles y P.Román. Anales del Desarrollo 22-53: 73-77/1978.
10. Velate gioblasts in the developing chick optic tectum: probable immature forms of oligodendroglia. L. Puelles. Neuroscience 3:41-47/1978.
11. Differentiation of neuroblasts in the chick optic tectum up to the eight day of incubation: a Golgi study. L. Puelles and M.C. Bendala. Neuroscience 3:207-325/1978.
12. Estudio por el método de Golgi de la secuencia de diferenciación de las primeras neuronas postmitóticas en el lóbulo óptico del embrión de pollo. L.Puelles. Anales del Desarrollo 22-53:79-84/1978.

1981

13. A Golgi study on the early sequence of differentiation of ganglion cells in the chick embryo retina. C. Prada, L. Puelles and J.M. Genis-Gálvez. Anatomy and Embryology 161:305-317/1981.

1985

14. Hyperthermia and the neurotoxicity of exogenous glutamate in infant rats. R. Peñafiel, A. Cremades, L. Puelles y F. Montserrat. Neurochemistry International 7:237-242/1985.

1987

15. Solitary magnocellular neurons in the avian optic tectum: cytoarchitectonic, histochemical and (3H) thymidine autoradiographic characterization. M. Martínez de la Torre, S. Martínez and L. Puelles. Neuroscience Letters 74:31-36/1987.
16. Autoradiographic and Golgi study on the early development of n. isthmi principalis and adjacent grisea in the chick embryo: a tridimensional viewpont. L. Puelles and M. Martínez de la Torre. Anatomy and Embryology 176:19-34/1987.
17. Two modes of free migration of amacrine cell neuroblasts in the chick retina. C. Prada, L. Puelles, J.M. Genis-Gálvez and G. Ramírez. Anatomy and Embryology 175:281-287/1987.
18. The locus of optic nerve head representation in the chick retinotectal map lacks a retinal projection. L. Puelles, S. Martínez and M. Martínez de la Torre. Neuroscience Letters 79:23-28/1987.
19. Location of the rostral end of the longitudinal brain axis: Review of an old topic in the light of marking experiments on the closing rostral neuropore. L. Puelles, G. Doménech-Ratto and M. Martínez-de-la-Torre. Journal of Morphology 194:163-171/1987
20. Segment-related, mosaic neurogenetic pattern in the forebrain and mesencephalon of early chick embryos. I. Topography of AChE-positive neuroblasts up to stage HH18. L. Puelles, J.A. Amat and M. Martínez de la Torre. Journal of Comparative Neurology 266:147-268/1987.

1988

21. The locus of optic nerve head representation in the retinotopic projection over n. geniculatus lateralis ventralis and n. griseum tectalis in the chick also lacks a retinal projection. L. Puelles, S. Martínez and M. Martínez de la Torre. Neuroscience Letters 85:35-39/1988.

1989

22. Avian nucleus isthmi ventralis projects to the contralateral optic tectum. S. Martínez and L. Puelles. Brain Research 481:181-184/1989.

1990

23. Acetylcholinesterase-histochemical differential staining of subdivisions within nucleus rotundus in the chick. M. Martínez de la Torre, S. Martínez and L. Puelles. Anatomy and Embryology 181:129-135/1990.
24. Golgi study of the anterior dorsal ventricular ridge in the lizard. I. Neuronal typology in the adult. C. Díaz, C. Yanes, L. Medina, M. Monzón, C.M. Trujillo and L. Puelles. Journal of Morphology 203:293-300/1990.
25. Golgi study of the anterior dorsal ventricular ridge in the lizard. II. Neuronal cytodifferentiation. C. Díaz, C. Yanes, L. Medina, M. Monzón, C.M. Trujillo and L. Puelles. Journal of Morphology 203:301-310/1990.
26. Neuronal typology of the thalamic area triangularis of Gallotia Galloti. L.Medina, C.Mª.Trujillo, C.Diaz and L.Puelles. Journal of Morphology 205: 113-121/1990.
27. Neuronal differentiation in the thalamic area triangularis of a lizard. L.Medina, C.Mª.Trujillo, C.Diaz and L.Puelles. Journal of Morphology 205: 123-134/1990.

1991

28. Acetylcholinesterase and NADH-diaphorase chemoarchitectonic subdivisions in the rabbit medial geniculate body. M. Caballero, B. Fernández and L. Puelles. Journal of Chemical Neuroanatomy. 4:271-280/1991.
29. Comparative mapping of acetylcholinesterase and reduced nicotinamide adenine dinucleotide diaphorase in the rabbit dorsal thalamus. M. Caballero, B. Fernández and L. Puelles. Acta Anatomica 140:224-235/1991.

30. Postnatal development of calbindin and parvalbumin immunoreactivity in the thalamus of the rat. C. Frassoni, M. Bentivoglio, R. Spreafico, M.P. Sánchez, L. Puelles and A. Fairén. Developmental Brain Research 58:243-249/1991.
31. Observations on the fate of nucleus superficialis magnocellularis of Rendahl in the avian diencephalon, bearing on the organization and nomenclature of neighboring retinorecipient nuclei. L. Puelles, M. Guillén, M. y M. Martínez de la Torre. Anatomy and Embryology 183:221-233/1991.
32. Retinal and tectal connections of embryonic nucleus superficialis magnocellularis and its mature derivates in the chick. S. Martínez, R.M. Alvarado-Mallart, M. Martínez de la Torre and L. Puelles. Anatomy and Embryology 183:235-243/1991.
33. Monosodium glutamate induced convulsions in rats: influence of route of administration, temperature and age. R. Peñafiel, A. Cremades, F. Monstserrat and L. Puelles. Aminoacids 1:81-89/1991.

1992

34. Reduced gap-juntional permeability at early interneuromeric boundaries. S. Martínez, E. Geijo, M.V. Sánchez-Vives, L. Puelles and R.Gallego. Development 116: 1069-1076/1992.
35. Prenatal development of calbindin immunoreactivity in the dorsal thalamus of the rat. L. Puelles, M.P. Sánchez, R. Spreafico and A. Fairén. Neuroscience 46: 135-147/1992.
36. Tangential neuronal migration in the avian tectum: cell type identification and mapping of regional differences with quail/chick homotopic transplants. S. Martínez, L. Puelles and R.M. Alvarado-Mallart. Developmental Brain Research 66: 153-163/1992.
37. Afferent connections of the habenular complex in the lizard Gallotia galloti. C. Díaz and L. Puelles. Brain, Behavior and Evolution 39:312-324/1992.
38. The pretectal complex of the rabbit: distribution of acetylcholinesterase and reduced nicotinamide adenine dinucleotide diaphorase activities. M. Caballero-Bleda, B Fernández and L. Puelles. Acta Anatomica 144:7-16/1992.
39. In vitro HRP-labeling experiments on the connections of the fasciculus retroflexus in the lizard Gallotia gallotia. C. Díaz and L. Puelles. Brain,Behavior and Evolution 39:305 -311/1992.
40. Distribution of neuropeptide Y-like immunoreactivity in the brain of the lizard Gallotia galloti. L. Medina, E. Martí, C. Artero, A. Fasolo and L.Puelles. Journal of Comparative Neurology 319:387-405/ 1992.

1993

41. A chemoarchitectonically similar internal extension connects the rabbit intergeniculate leaflet to midline dorsal thalamic nuclei. M. Caballero-Bleda, C. Lagares, B. Fernández and L.Puelles. Journal für Hirnforschung 34:33-40/1993.
42. Distribution of choline acetyltransferase inmunoreactivity in the brain of the lizard Gallotia galloti. L. Medina, W.J.A.J. Smeets, P.V. Hoogland and L. Puelles. Journal of Comparative Neurology 331: 261-285/1993
43. The mouse Dix-2 (Tes-1) gene is expressed in spatially restricted domains of the forebrain, face and limbs in midgestation mouse embryos. A. Bulfone, H-J. Kim, L.Puelles, M.H. Porteus, J.F. Grippo and J.L.R. Rubenstein. Mechanisms of Development 40:129-140/1993.
44. Spatially restricted expression of Dlx-1, Dlx-2 (Tes-1), Gbx-2 and Wnt-3 in the embryonic day 12.5 mouse forebrain defines potential transverse and longitudinal segmental boundaries. A.Bulfone, L. Puelles, M.H. Porteus, M.A. Frohman, G.R. Martin and J.L.R. Rubenstein. Journal of Neuroscience 13: 3155-3172/1993.
45. Expression patterns of homeobox and other putative regulatory genes in the embryonic mouse forebrain suggest a neuromeric organization. L.Puelles and J.L.R. Rubenstein. Trends in Neurosciences 16: 472-479/1993.

1994

46. Development of neurons expressing tyrosine hydroxylase and dopamine in the chicken brain: a comparative segmental analysis. L. Puelles and L. Medina. Capítulo en "Phylogeny and Development of Catecholamine Systems in the CNS of Vertebrates" , A. Reiner and W.J.A.J. Smeets (eds). Cambridge Univ.Press, Cambridge. 1994. pp381-406.
47. Ontogenesis of catecholamine systems in the brain of the lizard Gallotia galloti. L. Medina, L. Puelles and W.J.A.J. Smeets. Capítulo en "Phylogeny and Development of Catecholamine Systems in the CNS of Vertebrates". A. Reiner and W.J.A.J. Smeets (eds). Cambridge Univ.Press, Cambridge. 1994. pp361-380.

48. Reciprocal connections between the rabbit suprageniculate pretectal nucleus and the superior colliculus: tracer study with horseradish peroxidase and fluorogold. C. Lagares, M.Caballero-Bleda, B.Férnandez and L.Puelles. Visual Neuroscience 11: 347-353/1994

49. New subdivision schema for the avian torus semicircularis: neurochemical maps in the chick. L. Puelles, C. Robles, M. Martinez de la Torre and S. Martinez. Journal of Comparative Neurology 340: 98-125/1994.

50. The lacertidian reticular thalamic nucleus projects topographically upon the dorsal thalamus: Experimental study in Gallotia galloti. C. Díaz, C. Yanes, C.Mª. Trujillo and L. Puelles. Journal of Comparative Neurology 343:193-208/1994.

51. Patterning of the embryonic avian midbrain after experimental inversions: a polarizing activity from the isthmus. F. Marín and L. Puelles. Developmental Biology 163: 19-37/1994.

52. Development of catecholamine systems in the brain of the lizard Gallotia galloti. L.Medina, L.Puelles and W.A.J.Smeets. Journal of Comparative Neurology 350: 41-62/1994.

53. Homeobox gene expression during development of the vertebrate brain. J.L.R. Rubenstein and L.Puelles. Current Topics in Developmental Biology 29: 1-63/1994.

54. The prosomeric model: A proposal for the organization of the embryonic vertebrate forebrain. J.L.R.Rubenstein, S.Martínez, K.Shimamura and L.Puelles. Science 266: 578-580 /1994

55. Dlx-2, Mash-1, and Map-2 expression and bromodeoxyuridine incorporation define molecularly distinct cell populations in the embryonic mouse forebrain. M.H.Porteus, A.Bulfone, J-K.Liu, L.Puelles, L-C.Lo and J.L.R.Rubenstein. Journal of Neuroscience 14: 6370-6383/1994.

1995

56. Oligodendrocytes originate in a restricted zone of the embryonic ventral neural tube defined by DM-20 mRNA expression. S.Timsit, S.Martínez, B.Allinquant, F.Peyron, L.Puelles and B.Zalc. Journal of Neuroscience 15: 1012-1024/1995.

57. Morphological fate of rhombomeres in quail/chick chimeras: a segmental analysis of hindbrain nuclei. F.Marín and L.Puelles. European Journal of Neuroscience 7: 1714-1738/1995.

58. Induction of ectopic engrailed expression and fate change in avian rhombomeres: intersegmental boundaries as barriers. S.Martínez, F.Marín, M.A.Nieto and L.Puelles. Mechanisms of Development 51:289-303/1995.

59. Técnicas de neuroembriología experimental. Capítulo en: "Bases Experimentales para el Estudio del Sistema Nervioso", Vol.I. E.J.Miñano y J.A.Armengol (eds). L. Puelles y S. Martínez Serv.Publ.Univ. de Sevilla, 1995.

60. Id gene expression during development and molecular cloning of the human Id-1 gene. W.Zhu, J.Dahmen, A.Bulfone, M.Rigolet, M-C.Hernández, W-L-Kuo, L.Puelles, J.L.R.Rubenstein and M.A.Israel. Molecular Brain Research 30: 312-326/1995.

61. T-Brain-1 (Tbr-1): A homologue of Brachyury whose expression defines molecularly distinct domains within the cerebral cortex. A.Bulfone, S.M.Smiga, K.Shimamura, A.Peterson, L.Puelles and J.L.R.Rubenstein. Neuron 15:63-78 /1995.

62. Longitudinal organization of the anterior neural plate and neural tube. K.Shimamura, D.-J.Hartigan, S.Martínez, L.Puelles and J.L.R.Rubenstein. Development 121:3923-3933/1995

63. A segmental morphological paradigm for understanding vertebrate forebrains. L. Puelles. Brain, Behavior and Evolution 46:319-337/1995.

1996

64. A segmental map of subdivisions in the diencephalon of the frog Rana perezi: acetylcholinesterase-histochemical observations. L.Puelles, F.J.Milán and M.Martínez-de-la-Torre. Brain, Behavior and Evolution 47: 279-310/1996.

65. The midbrain-hindbrain junction: A model system for brain regionalization through morphogenetic neuroepithelial interactions. L.Puelles, F.Marín, S.Martínez and M.Martínez-de-la-Torre. Capítulo en: "Mammalian Development ", P.Lonai (ed). Gordon & Breach/Harwood Academic Publishers, Amsterdam 1996

66. Intertectal commissural projection in the lizard Gallotia stehlini: origin and midline topography. L.Pérez-Santana, M.Martínez-de-la-Torre, J.F.Loro and L.Puelles. Journal of Comparative Neurology 366:360-369/1996.

67. Atlas of prenatal rat brain development (book review). L.Puelles. Trends in Neuroscience 19:116-117/1996.

68. Desarrollo y plasticidad neurales: Implicaciones para la teoría materialista emergente de la mente. L.Puelles. Arbor CLIII, 602: 141-158/1996.
69. Expression patterns of two murine homologs of Drosophila single-minded suggest possible roles in embryonic patterning and in the pathogenesis of Down syndrome. Ch-M.Fan, E.Kuwana, A.Bulfone, C.F.Fletcher, N.G.Copeland, N.A.Jenkins, S.Martinez, L.Puelles, J.L.R.Rubenstein and M.Tessier-Lavigne. Molecular and Cellular Neuroscience 7:1-16/1996.
70. The avian inferior olive derives from the alar neuroepithelium of the rhombomeres 7 and 8: an analysis by using chick-quail chimeric embryos. J.Ambrosiani, J.A.Armengol, S.Martínez and L.Puelles. Neuroreport 7:1285-1288/1996.
71. El desarrollo de la mente como fenómeno material. L.Puelles. En "El cerébro íntimo", F.Mora (ed), Ariel, Barcelona, capítulo 10, 1996.

1997

72. Patterns of gene expression in the neural plate and neural tube subdivide the embryonic forebrain into transverse and longitudinal domains. K.Shimamura, S.Martínez, L.Puelles and J.L.R.Rubenstein. Developmental Neuroscience 19:88-96/1997.
73. Retrospective clonal analysis of the cerebellum using genetic laacZ/lacZ mouse mutants. L.Mathis, C.Bonnerot, L.Puelles and J-F.Nicolas. Development 124:4089-4104/1997

1998

74. Regionalization of the prosencephalic neural plate. J.L.R.Rubenstein, K.Shimamura, S.Martínez and L.Puelles. Annual Reviews of Neuroscience 21:445-477/1998
75. Early neuromeric distribution of tyrosine-hydroxylase and dopamine-ß-hydroxylase immunoreactive neurons in human embryos. L.Puelles and C.Verney. Journal of Comparative Neurology 394:283-308/1998.
76. Expression pattern of cSix3, a member of the six/sine oculis family of transcription factors. P.Bovolenta, A.Mallamaci, L.Puelles and E.Boncinelli. Mechanisms of Development 70:201-203/1998.
77. Calretinin in pretecto- and olivocerebellar projections in the chick: immunohistochemical and experimental study. F.de Castro, I.Cobos, L.Puelles and S.Martínez. Journal of Comparative Neurology 397:149-162/1998.
78. Cadherin expression in the retina and retinofugal pathways of the chicken embryo. J-C.P.Wöhrn, L.Puelles, S.Nagakawa, M.Takeichi and C.Redies. Journal of Comparative Neurology 396:20-38/1998.
79. The relationship between rhombomeres and vestibular neuron populations as assessed in quail-chicken chimeras. C.Díaz, L.Puelles, F.Marín and J.C.Glover. Developmental Biology 202:14-28/1998.
80. Importance of immunological and inflammatory processes in the pathogenesis and therapy of Alzheimer's disease. M.Popovic, M.Caballero-Bleda, L.Puelles and N.Popovic. International Journal of Neuroscience 95:203-236/1998.
81. Effect of acute verapamil treatment on body temperature in nucleus basalis magnocellularis-lesioned rats. M.Popovic, N.Popovic, M.Caballero-Bleda and L.Puelles. Neuroscience Research Communications 23:181-187/1998.

1999

82. Comparison of the mammalian and avian telencephalon from the perspective of gene expression data. L.Puelles, E.Kuwana, E.Puelles and J.L.R.Rubenstein. European Journal of Morphology 37:139-150/1999.
83. Early postembryonic neural development in the zebrafish: a 3-D reconstruction of forebrain proliferation zones shows their relation to prosomeres. M.F.Wulliman, L.Puelles and H.Wicht. European Journal of Morphology 37:117-121/1999.
84. Diencephalic neuronal populations projecting axons into the basal plate in a lizard. C.Diaz, L.Perez-Santana, M.Martinez-de-la-Torre, and L.Puelles. European Journal of Morphology 37:130-133/1999.
85. Patterning signals acting in the spinal cord override the organizing activity of the isthmus. A.Grapin-Botton , F.Cambronero, H.L.Weiner, M-A. Bonnin, L. Puelles and N.M. Le Douarin. Mechanisms of Development 84:41-53/1999.
86. Cyclic nucleotide-gated cation channel expression in chicken embryos. L.C.Timpe, K.L.Jin, L.Puelles and J.L.R.Rubenstein. Molecular Brain Research 66:175-178/1999.
87. A prosomeric map of the lamprey forebrain based on calretinin immunocytochemistry, Nissl stain and ancillary markers. M.A.Pombal and L.Puelles. Journal of Comparative Neurology 414:391-422/1999.

88. Postembryonic neural proliferation in the zebrafish forebrain and its relationship to prosomeric domains. M.F. Wullimann and L.Puelles. Anatomy and Embryology 329:329-348/1999.
89. Dlx-1, Dlx-2, and Dlx-5 expression define distinct stages of basal forebrain differentiation. D.D.Eisenstat, J.K.Liu, M.Mione, W.Zhong, G.Yu, S.A.Anderson, I.Ghattas, L.Puelles, and J.L.R.Rubenstein. Journal of Comparative Neurology 414:217-237/1999.
90. USP25, a novel gene encoding a deubiquitinating enzyme, is located in the gene-poor region 21q11.2. R.Valero, G.Marfany, O.González-Angulo, G.González-González, L.Puelles, and R.González-Duarte. Genomics 62:395-405/1999.
91. Review of Brain Maps: Structure of the Rat Brain. Second Revised Edition, by L.W.Swanson (Elsevier, 1998) (Book review) L.Puelles. TINS 1999.

2000

92. Patterns of calretinin, calbindin and tyrosine-hydroxylase immunoreactivity patterns are consistent with the prosomeric map of the frog diencephalon. J.Milán and L.Puelles. Jornal of Comparative Neurology 419:96-121/2000.
93. La música y el cerebro. L.Puelles. Capítulo de libro en: I Jornadas sobre la Música y la Juventud. Nuevos Horizontes en Educación Musical. (A.Narejos, ed.). Murcia. Universidad de Murcia, Servicio de Publicaciones, pp.39-66/2000.
94. Formation of cadherin-expressing brain nuclei in diencephalic alar plate divisions. M-Y.Yoon, L.Puelles and C.Redies. Journal of Comparative Neurology 421:461-480/2000.
95. Morphologic fate of diencephalic prosomeres and their subdivisions revealed by mapping cadherin expression. C.Redies, M.Ast, S.Nakagawa, M.Takeichi, M.Martínez-de-la-Torre and L.Puelles. Journal of Comparative Neurology 421:481-514/2000.
96. Pallial and subpallial derivatives in the chick and mouse telencephalon, traced by the embryonic expression profiles of the genes Dlx-2, Emx-1, Nkx-2.1, Pax-6 and Tbr-1. L.Puelles, E.Kuwana, E.Puelles, J.Keleher, A.Bulfone and J.L.R.Rubenstein. Journal of Comparative Neurology 424:409-438/2000.
97. Calcium-binding proteins in the diencephalon of the lizard Psammodromus algirus. J.C.Dávila, S.Guirado and L.Puelles. Journal of Comparative Neurology 427:67-92/2000.
98. Cytoarchitectonic subdivisions in the subtectal midbrain of the lizard Gallotia galloti. C.Díaz, C.Yanes, C-M.Trujillo and L.Puelles. Journal of Neurocytology 29:569-593/2000.
99. Rostrocaudal nuclear relationships in the avian medulla oblongata: Fate-map with quail-chick chimeras. F.Cambronero and L.Puelles. Journal of Comparative Neurology 427:522-545/2000.
100. The anterior nucleus of the ansa lenticularis in birds is the homologue of the mammalian subthalamic nucleus. Y.Jiao, L.Medina, C.L.Veenman, C.Toledo, L.Puelles and A.Reiner. Journal of Neuroscience 20:6998-7010/2000
101. Neurogenetic compartments of the mouse diencephalon and some characteristic gene expression patterns. S.Martínez and L.Puelles. Results Probl Cell Differ. 30:91-106/2000
102. La evolución del cerebro y la inteligencia del hombre. L.Puelles. En "Evolución cerebral y psicopatología". J.Sanjuán (ed.). Valencia: Edit.Tricastella, pp.93-114./2000

2001

103. Cadherin expression by embryonic subdivisions and derived gray matter structures in the telencephalon of the chicken. C.Redies, L.Medina and L.Puelles. Journal of Comparative Neurology 438:253–285/2001.
104. Structure of longitudinal brain zones that originate the substantia nigra and ventral tegmental area in human embryos, as revealed by cytoarchitecture and tyrosine-hydroxylase-, calbindin-, calretinin- and GABA-immunoreaction. C.Verney, N.Zecevic and L.Puelles. Journal of Comparative Neurology 429:22-44/2001
105. NADPH-Diaphorase activity in the frontal cortex of NBM-lesioned rats treated with Verapamil. M.Caballero-Bleda, F.J.Redondo-Aniorte, A.Aldeguer-Montiel, N.Popovíc, M. Popovíc and L.Puelles. Neuroscience Research Communications 28:115-122/2001
106. Thoughts on the development, structure and evolution of the mammalian and avian telencephalic pallium. L. Puelles. Philosophical Transactions of the Royal Society Ser. B Biol.Sci.(London) 356:1583-1598/2001 (review)
107. Chicken Nkx6.1 expression at advanced stages of development identifies distinct brain nuclei derived from the basal plate.E.Puelles, J.L.R. Rubenstein, L.Puelles. Mechanisms of Development 102:279-282/2001.

108. Brain segmentation and forebrain development in amniotes. L.Puelles. Brain Research Bulletin 55:695-710/2001. (review)
109. Fate map of the avian anterior forebrain at the 4 somite stage, based on the analysis of quail-chick chimeras. Cobos, I., Shimamura, K., Rubenstein, J.L.R., Martínez, S., and L.Puelles. Developmental Biology 239:46-67/2001
110. The avian telencephalic subpallium originates tangentially migrating inhibitory neurons that invade the dorsal ventricular ridge and the cortical areas. Cobos, I., Puelles, L.,and S.Martínez. Developmental Biology 239:30-45/2001
111. Modularity in CNS development. C.Redies and L.Puelles. Bioessays 23:1100-1111/2001 (review).

2002

112. Stuehmer T, Puelles L, Ekker M, Rubenstein JLR. Expression from a Dlx gene enhancer marks adult mouse cortical GABAergic neurons. Cerebral Cortex 2002;12:75-85.
113. Marín O, BakerJ, Puelles L, Rubenstein JLR. Patterning of the basal telencephalon and hypothalamus is essential for guidance of cortical projections. Development 2002; 129:761-773.
114. Redies C, Kovjanic D, Heyers D, Medina L, Hirano S, Suzuki ST, Puelles L. Patch/matrix patterns of gray matter differentiation in the telencephalon of chicken and mouse. Brain Res Bull 2002; 57:489-494.
115. García-Calero E, Martínez-de-la-Torre M, Puelles L. The avian griseum tectale: cytoarchitecture, NOS expression and neurogenesis. Brain Res Bull 2002; 57:353-358.
116. Martínez-de-la-Torre M, Garda A-L, Puelles E, Puelles L. Gbx2 expression in the late embryonic chick dorsal thalamus. Brain Res Bull 2002; 57:435-438.
117. Puelles L, Medina L. Field homology in the brain and elsewhere: can it resolve genetic and morphogenetic variability problems in homology? Brain Res Bull 2002; 57:243-256.
118. González G, Puelles L, Medina L. Organization of the mouse dorsal thalamus based on topology, calretinin immnunostaining and gene expressions. Brain Res Bull 2002; 57:439-443.
119. Brox A, Ferreiro B, Puelles L, Medina L. Observations on the telencephalon of Xenopus laevis, based on calretinin immunostaining and gene expression patterns. Brain Res Bull 2002; 57:381-384.
120. Fernández-Garre P, Rodríguez-Gallardo L, Alvarez IS, Puelles L.A neural plate fate map at stage HH4 in the chick: methodology and preliminary data. Brain Res Bull 2002; 57:293-296.
121. Fernández-Garre P, Rodríguez-Gallardo L, Gallego-Diaz V, Alvarez IS, Puelles L. Fate map of the chicken neural plate at stage HH4. Development 2002; 129, 2807-2822.
122. Garda A-L, Puelles L, Rubenstein JLR, Medina L.Expression patterns of wnt8b and wnt7b in the chicken embryonic brain suggest a correlation with forebrain patterning centers and morphogenesis. Neuroscience 2002; 113:689-698.
123. Dávila JC, Andreu MJ, Real MA, Puelles L, Guirado S. Mesencephalic and diencephalic afferent connections to the thalamic nucleus rotundus in the lizard Psammodromus algirus. Eur J Neurosci 2002;16:267-282.
124. Gorski JA, Talley T, Qiu M, Puelles L, Rubenstein JLR, Jones KR. Cortical excitatory neurons and glia, but not GABAergic neurons, are produced in the Emx-1-expressing lineage. J Neurosci 2002; 22:6309-6314.
125. Puelles L, Rubenstein JLR. Forebrain. In "Encyclopedia of the Human Brain" (3 vols; V.S.Ramachandran, ed.). Elsevier Science, San Diego 2002.
126. Diaz C, Puelles L. Organización segmental de las eferencias del complejo vestibular en embriones de pollo: un ejemplo del caso general. Rev Neurol. 2002; 35:922-930.

2003

127. Díaz C, Glover JC, Puelles L, Bjaalie J. The relationship between hodological and cytoarchitectonic organization in the vestibular complex of the 11-day chicken embryo. J Comp Neurol 2003; 457:87–105.
128. Lagutin OV, Zhu CC, Kobayashi D, Topczewski J, Shimamura K, Puelles L, Russell HRC, McKinnon PJ, Solnica-Krezel L, Oliver G. Six3 repression of Wnt signaling in the anterior neuroectoderm is essential for vertebrate forebrain development. Genes & Devel 2003; 17:368-379.
129. Díaz C, Puelles L. Plurisegmental vestibulocerebellar projections and other cerebellar afferents in midterm chick embryos: biotinylated dextranamine experiments in vitro. Neuroscience 2003; 117:71-82.

130. Brox A, Puelles L, Ferreiro B, Medina L. Expression of the genes GAD67 and Distal-less-4 in the forebrain of Xenopus laevis confirms a common pattern in tetrapods. J Comp Neurol 2003; 461:370-393.
131. Baez J, Monzon-Mayor M, Yanes C, del Mar Romero-Aleman M, Arbelo-Galvan JF, Puelles L. Neuronal differentiation patterns in the optic tectum of the lizard Gallotia galloti. Brain Res 2003; 975:48-65.
132. Rubenstein JLR, Puelles L. Development of the nervous system. Chapter 8 in "Inborn Errors of Development: Molecular Basis of Clinical Disorders of Morphogenesis", Epstein CJ, Erikson RP, Wynshaw-Boris A (eds). New York: Oxford Univ.Press, 2003.
133. Puelles L, Rubenstein JLR. Forebrain gene expression domains and the evolving prosomeric model. Trends Neurosci 2003; 26:469-476.

2004

134. Puelles L, Martínez S, Martínez-de-la-Torre M, Rubenstein JLR. Gene maps and related histogenetic domains in the forebrain and midbrain. In: The Rat Nervous System, Third Edition, G.Paxinos (ed), Academic Press, San Diego, CA, 2004, pp. 3-25.
135. Popović M, Caballero-Bleda M, Puelles L, Conde-Guerri E. Multiple-binge alcohol consumption during rat adolescence increases anxiety but does not impair retention in the passive avoidance task. Neurosci Lett 2004; 357:79-82.
136. Müller K, Hirano S, Puelles L, Redies C. OL-Protocadherin expression in the visual system of the chicken embryo. J Comp Neurol 2004; 470:240-255.
137. Pan Q, Li C, Xiao J, Kimura S, Rubenstein JLR, Puelles L, Minoo P. In vivo characterization of the Nkx2.1 promoter/enhancer elements in transgenic mice. Gene 2004; 331:73-82.
138. Medina L, Legaz I, González G, de Castro F, Rubenstein JLR, Puelles L. Dbx1, Neurogenin2, Semaphorin 4C, Cadherin 8 and Emx1 distinguish ventral and lateral pallial histogenetic divisions in the developing mouse claustroamygdaloid complex. J Comp Neurol 2004; 474: 504-523.
139. Brox A, Puelles L, Ferreiro B, Medina L. Expression of the genes Emx1, Tbr1, and Eomes (Tbr2) in the telencephalon of Xenopus laevis confirms the existence of four pallial divisions in tetrapods. J Comp Neurol 2004; 474:562-577.
140. Redies C, Puelles L. Central nervous system development: From embryonic modules to functional modules. In "Modularity in Development and Evolution" Schlosser, G. and ", Wagner, G.P. (eds). Chicago. Chicago Univ.Press, 2004; pp154-182.
141. Kerwin JM, Scott MK, Sharpe J, Puelles L, Robson SC, Martínez-de-la-Torre M, Ferrán JL, Feng G, Baldock RA, Strachan T, Davidson D, Lindsay S. 3-D modelling, gene expression mapping and post-mapping image analysis in the developing human brain. BMC Neuroscience 2004; 5:27-38.
142. Ju MJ, Aroca P, Puelles L, Redies C. Molecular profiling indicates avian branchiomotor nuclei invade the hindbrain alar plate. Neuroscience 2004; 128:785-796.
143. Rubenstein JLR, Puelles L. Survey of brain development. Chapter 5 in Handbook of Mental Health Interventions in Children and Adolescents. An integrated developmental approach. (H.Steiner, ed). Jossey-Bass: San Francisco, 2004; pp98-139.
144. Miller et al. Genome news highlights loss of chicken strains. [Correspondence] Nature 2004; 432: 799.

2005

145. Hidalgo-Sánchez M, Martínez-de-la-Torre M, Alvarado-Mallart RM, Puelles L. Distinct pre-isthmic domain, defined by overlap of Otx2 and Pax2 expression domains in the chicken caudal midbrain. J Comp Neurol 2005; 483:17-29.
146. Lopez-Sanchez C, Garcia-Martinez V, Puelles L, Rodriguez-Gallardo L. Morphological and molecular analysis of the early developing chick requires an expanded series of primitive streak stages. J Morphol 2005; 264:105-116.
147. Garcia Calero E, Puelles L. Pallial expression of Enc1 RNA in postnatal mouse telencephalon. Brain Res Bull 2005; 66:445-448.
148. Medina L, Brox A, Legaz I, García-López M, Puelles L. Expression patterns of developmental regulatory genes show comparable divisions in the telencephalon of Xenopus and mouse: insights into the evolution of the tetrapod forebrain. Brain Res Bull 2005; 66:297-302.
149. Rodríguez-Gallardo L, Sánchez-Arrones L, Fernández-Garre P, Puelles L.Agreement and disagreement among fate maps of the chicken neural plate. Brain Res Rev 2005; 49:191-201.

150. Puelles L, Fernández-Garre P, Sánchez-Arrones L, García-Calero E, Rodríguez-Gallardo L. Correlation of a chicken stage 4 neural plate fate map with early gene expression patterns. Brain Res Rev 2005; 49:167-178.
151. Aroca P, Puelles L. Postulated boundaries and differential fate in the developing rostral hindbrain. Brain Res Rev 2005; 49:179-190.
152. Marín F., Herrero M.T., Vyas S, Puelles L. Ontogeny of tyrosine-hydroxylase mRNA expression in mid- and forebrain: neuromeric pattern and novel positive regions. Devel Dyn 2005; 234:709–717.
153. Sarma S, Kerwin J, Puelles L, Scott M, Strachan T, Feng G, Sharpe J, Davidson D, Baldock R, Lindsay S. 3D modelling, gene expression mapping and post-mapping image analysis in the developing human brain. Brain Res Bull 2005; 66:449-453.
154. Popovic M, Caballero-Bleda M, Popovic N, Puelles L, van Groen T, Witter MP. Verapamil prevents, in a dose-dependent way, the loss of ChAT-immunoreactive neurons in the cerebral cortex following lesions of the rat nucleus basalis magnocellularis. Exp Brain Res 2005; 221:211-219.
155. Lindsay S, Sarma S, Martínez-de-la-Torre M, Kerwin J, Scott M, Ferran JL, Baldock R, Puelles L. Anatomical and gene expression mapping of the ventral pallium in a 3-dimensional model of developing human brain. Neuroscience 2005;136:625-632.
156. Molnar Z, Butler AB, ten Donkelaar HJ, Medina L, Puelles L. Introduction to the proceedings of the fourth European conference on comparative neurobiology: evolution and development of nervous systems. Brain Res Bull 2005; 66:269-270.

2006

157. Aroca P, Lorente-Cánovas B, Mateos F.R, Puelles L. Locus coeruleus neurons originate in alar rhombomere 1 and migrate into the basal plate: studies in chick and mouse embryos. J Comp Neurol. 2006; 496:802-818.
158. García-Calero E, Garda A-L, Puelles L. The gene Lrrn1 marks the prospective site of the zona limitans thalami in the early embryonic chicken diencephalon. Gene Expr Patterns 2006; 6:879-885.
159. García-Calero E, de Puelles E, Puelles L. EphA7 receptor is expressed differentially at chicken prosomeric boundaries. Neuroscience 2006; 141:1887-1897.
160. Bardet SM, Cobos I, Puelles E, Martínez-de-la-Torre M, Puelles L. The chicken lateral septal organ and other circumventricular organs form in a striatal subdomain, abutting the molecular striatopallidal border. J Comp Neurol 499:745-767 (2006)

2007

161. Puelles L, Martínez-de-la-Torre M, Paxinos G, Watson C, Martínez S. The Chick Brain in Stereotaxic Coordinates: an Atlas featuring Neuromeric Subdivisions and Mammalian Homologies. San Diego: Elsevier/Academic Press, 2007.
162. Flames N, Pla R, Gelman DM, Rubenstein JLR, Puelles L, Marín O. Delineation of multiple subpallial progenitor domains by the combinatorial expression of transcriptional codes. J Neurosci 2007; 27:9682-9695.
163. Ferran JL, Sánchez-Arrones L, Sandoval JE, Puelles L. A model of early molecular regionalization in the chicken embryonic pretectum. J Comp Neurol 2007; 505:379-403.

2008

164. Ferran JL, Sánchez-Arrones L, Bardet SM, Sandoval J, Martínez-de-la-Torre M, Puelles L. Early pretectal gene expression pattern shows a conserved anteroposterior tripartition in mouse and chicken. Brain Res Bull 2008; 75:295-298.
165. Puelles L, Martínez S, Martínez-de-la-Torre M. Texto de Neuroanatomía. Ed.Médica Panamericana, 2008.
166. van den Akker WM, Brox A, Puelles L, Durston AJ, Medina L.Comparative functional analysis provides evidence for a crucial role for the homeobox gene Nkx2.1/Titf-1 in forebrain evolution. J Comp Neurol. 2008; 506:211-223.
167. García-López M, Abellán A, Legaz I, Rubenstein JL, Puelles L, Medina L. Histogenetic compartments of the mouse centromedial and extended amygdala based on gene expression patterns during development. J Comp Neurol 2008; 506: 46-74.
168. Rodríguez-Gallardo L, Hidalgo-Sánchez M, Sánchez-Arrones L, Prior L, Puelles L. Quantitative analysis of neural plate thickness and cell density during gastrulation in the chick embryo. Brain Res Bull 2008; 75:310-313.

169. Bardet SM, Martinez-de-la-Torre M, Northcutt RG, Rubenstein JLR, Puelles L. Conserved pattern of OTP positive cells in the paraventricular nucleus and other hypothalamic sites of tetrapods. Brain Res Bull 2008; 75:231-235.
170. Marín F, Aroca P, Puelles L. Hox gene colinear expression in the avian medulla oblongata is correlated with pseudorhombomeric domains. Devel Biol 2008; 323:230-247.
171. García-Calero E, Fernández-Garre P, Martínez S, Puelles L. Early mammillary pouch specification in the course of prechordal ventralization of the forebrain tegmentum. Devel Biol 2008; 320:366-377.

2009

172. Puelles L. Forebrain Development: Prosomere Model. In: Encyclopedia of Neuroscience, L.R. Squire (ed) Academic Press, Oxford, 2009; pp.315-319.
173. Sánchez-Guardado L, Ferran JL, Mijares J, Puelles L, Rodríguez-Gallardo L, Hidalgo-Sánchez M. Raldh3 gene expression pattern in the developing chicken inner ear. J Comp Neurol 2009; 514:49–65.
174. Ng L, Bernard A, Lau C, Dong H, Kuan L, Pathak S, Sunkin S, Dang C, Bohland JW, Bokil H, Mitra PP, Puelles L, Hohmann J, Lein ES, Jones AR, Hawrylycz M. An anatomic gene expression atlas of the adult mouse brain. Nature Neurosci 2009; 12:356-362.
175. López-Contreras AJ, Ramos-Molina B, Martinez-de-la-Torre M, Peñafiel-Verdú C, Puelles L, Cremades A, Peñafiel R. Expression of antizyme inhibitor 2 in male haploid germinal cells suggests a role in spermiogenesis. Int J Biochem Cell Biol 2009; 41:1070-1078.
176. Ferrán JL, Dutra de Oliveira E, Sánchez-Arrones L, Sandoval JE, Martínez-de-la-Torre M, Puelles L. Geno-architectonic analysis of regional histogenesis in the chicken pretectum. J Comp Neurol 2009; 517:405-451.
177. Puelles L. Contributions to neuroembryology of Santiago Ramón y Cajal. Int J Devel Biol 2009; 53:1145-1160.
178. Pombal MA, Megias M, Bardet SM, Puelles L. New and old thoughts on the segmental organization of the forebrain in lampreys. Brain Behav Evol 2009; 74:7-19.
179. Puelles L. Forebrain development: prosomere model. Chapter in "Developmental Neurobiology", Lemke G. (ed). Academic Press/Elsevier, 2009; pp.95-99.
180. García-Calero E, Puelles L. Enc1 expression in the chick telencephalon at intermediate and late stages of development. J Comp Neurol 2009; 517:564-580.
181. Sánchez-Arrones L, Ferrán JL, Rodríguez-Gallardo L, Puelles L. Incipient forebrain boundaries traced by differential gene expression and fate mapping in the chick neural plate. Devel Biol 2009; 335:43-65.

2010

182. Bardet SM, Ferran JL, Sanchez- Arrones L, Puelles L. Development of Shh expression at the chicken telencephalic stalk. Front Neuroanat 2010; 4:1-16.
183. De Grandis E, Serrano M, Pérez-Dueñas B, Ormazábal A, Montero R, Alonso A, Veneselli E, Pineda M, González V, Sanmartí F, Fons C, Sans A, Cormand B, Puelles L, Campistol J, Artuch R, García-Cazorla A. Cerebrospinal fluid alterations of the serotonin product 5-hydroxyindolacetic acid in neurological disorders. J Inherit Metab Dis 2010; 33:803-809.
184. Kerwin J, Yang Y, Merchan P, Sarma S, Thompson J, Wang X, Sandoval JE, Puelles L, Baldock R, Lindsay S. The HUDSEN Atlas: a three-dimensional (3D) spatial framework for studying gene expression in the developing human brain. J Anat 2010; 217:289-299.

2011

185. Morona R, Ferran JL, Puelles L, González A. Embryonic genoarchitecture of pretectum in Xenopus laevis: a conserved pattern in tetrapods. J Comp Neurol 2011; 519:1024-1050.
186. Sánchez-Guardado LO, Ferran JL, Rodríguez-Gallardo L, Puelles L, Hidalgo-Sánchez M. Meis gene expression patterns in the developing chicken inner ear. J Comp Neurol 2011; 519:125-147.
187. Hawrylycz M, Baldock RA, Burger A, Hashikawa T, Johnson GA, Martone M, Ng L, Lau C, Larsen SD, Nissanov J, Puelles L, Ruffins S, Verbeek F, Zaslavsky I, Boline J. Digital atlasing and standardization in the mouse brain. PLoS Comput Biol 2011; Feb 3;7(2):e1001065.
188. Sánchez-Guardado LO, Irimia M, Sánchez-Arrones L, Burguera D, Rodríguez-Gallardo L, Garcia-Fernández J, Puelles L, Ferran J.L, Hidalgo-Sánchez M. Distinct and redundant expression and transcriptional diversity of Meis gene paralogs during chicken development. Devel Dyn 2011; 240:1475-1492.

189. Martínez-de-la-Torre M, Pombal MA, Puelles L. Distal-less-like protein distribution in the larval lamprey forebrain. Neuroscience 2011; 178:270-284.
190. Merchán P, Bardet SM, Puelles L, Ferran JL. Comparison of pretectal genoarchitectonic pattern between quail and chicken embryos. Front Neuroanat 2011; Apr 5;5:23.
191. Morales-Delgado N, Merchan P, Bardet S.M,. Ferrán JL, Puelles L, Díaz C. Topography of somatostatin gene expression relative to molecular progenitor domains during ontogeny of the mouse hypothalamus. Front Neuroanat. 2011; Febr 28; doi:10.3389/fnana.2011.00010.
192. Tomás-Roca L, Pérez-Aytes A, Puelles L, Marín F. In silico identification of new candidate genes for hereditary congenital facial paresis. Int J Dev Neurosci 2011; 29:451-460.
193. Irimia M, Maeso I, Burguera D, Hidalgo-Sánchez M, Puelles L, Roy SW, Garcia-Fernàndez J, Ferran JL. Contrasting 5' and 3' evolutionary histories and frequent evolutionary convergence in Meis/hth gene structures. Genome Biol Evol 2011; 3:551-564.
194. Puelles L. Pallio-pallial tangential migrations and growth signaling: new scenario for cortical evolution? Brain Behav Evol 2011; 78:108-127.

2012

195. Puelles L, Martinez-de-la-Torre M, Bardet S, Rubenstein, JLR. Hypothalamus. Chapter 8 in "The Mouse Nervous System". Watson C, Paxinos G, Puelles L (eds). Academic Press/Elsevier 2012; pp221-312.
196. Puelles L, Watson C, Martinez-de-la-Torre M, Ferran JL. Diencephalon. Chapter 9 in « The Mouse Nervous System ». Watson C, Paxinos G, Puelles L (eds). Academic Press/Elsevier 2012; pp. 313-336.
197. Puelles E, Martinez-de-la-Torre M, Watson C, Puelles L. Midbrain. Chapter 10 in «The Mouse Nervous System ». Watson C, Paxinos G, Puelles L (eds). Academic Press/Elsevier 2012; pp. 337-359.
198. Martínez S, Puelles E, Puelles L, Echevarria D. Molecular regionalization of developing neural tube. Chapter 1 in "The Mouse Nervous System". Watson C, Paxinos G, Puelles L (eds). Academic Press/Elsevier 2012; pp. 2-18.
199. Skidmore J, Waite M, Alvarez-Bolado G, Puelles L, Martin D. A novel Tau-LacZ allele reveals a requirement for Pitx2 in formation of the mammillothalamic tract. Genesis 2012; 50:67-73.
200. Lorente-Cánovas B, Marín F, Corral-San-Miguel R, Hidalgo-Sánchez M, Ferran JL, Puelles L, Aroca P. Pax7 and Nkx6.1 identify differentially originated neuronal populations that migrate into the interpeduncular nucleus. Devel Biol 2012; 361:12-26.
201. Sánchez-Arrones L, Stern CD, Bovolenta P, Puelles L. Sharpening of the anterior neural border in the chick by rostral endoderm signalling. Development 2012: 139:1034-1044.
202. Irimia M, Denuc A, Ferran JL, Pernaute B, Puelles L, Roy SW, Garcia-Fernàndez J, Marfany G. Evolutionarily conserved A-to-I editing increases protein stability of the alternative splicing factor Nova1. RNA Biol. 2012; Jan 1; 9(1).
203. Martinez-Garcia F, Puelles L, ten Donkelaar HJ, Gonzalez A. Adaptive functions and brain evolution. Front Neuroanat 2012; doi:10.3389/fnana.2012.00017
204. Geysens S, Ferran JL, Van Herck S, Tylzanowski P, Puelles L, Darras V. Dynamic mRNA distribution pattern of thyroid hormone transporters and deiodinases during early embryonic chicken brain development. Neuroscience 2012; 221: 69–85.
205. Hidalgo-Sánchez M, Backer S, Puelles L, Bloch-Gallego E. (2012) E.Origin and plasticity of the subdivisions of the inferior olivary complex. Devel Biol 371:215-226.
206. Alonso A, Merchán P, Sandoval JE, Sánchez-Arrones L, Garcia-Cazorla A, Artuch R, Ferrán JL, Martínez-de-la-Torre M, Puelles L. (2012) Development of the serotonergic cells in murine raphe nuclei and their relations with rhombomeric domains. Brain Struct Funct 218:1229-1277.
207. Puelles L, Ferran JL. Concept of genoarchitecture and its genomic fundament. Front Neuroanat 2012; doi:10.3389/fnana.2012.00047.

2013

208. Sánchez-Guardado LO, Puelles L, Hidalgo-Sánchez M. (2013) Fgf10 expression patterns in the developing chick inner ear. J Comp Neurol 521:1136-1164.
209. Di Bonito M, Narita Y, Avallone B, Sequino L, Mancuso M, Andolfi G, Franzé AM, Puelles L, Rijli FM, Studer M. Assembly of the auditory circuitry by a Hox genetic network in the mouse brainstem. PLoS Genetics 2013; 9 (2): e1003249. doi:10.1371/journal.pgen.1003249.
210. Puelles L., Plan of the Developing Vertebrate Nervous System Relating Embryology to the Adult Nervous System (Prosomere Model,Overview of Brain Organization), In: J.L.R. Rubenstein and P.

Rakic editors: Comprehensive Developmental Neuroscience: Patterning and Cell Type Specification in the Developing CNS and PNS, Amsterdam: Academic Press, 2013, pp. 187-209.
211. Puelles L. and Martinez S., Patterning of the Diencephalon, In: J.L.R. Rubenstein and P. Rakic editors: Comprehensive Developmental Neuroscience: Patterning and Cell Type Specification in the Developing CNS and PNS, Amsterdam: Academic Press, 2013, pp. 151-172.
212. Puelles L, Harrison M, Paxinos G, Watson C. (2013) A developmental ontology for the mammalian brain based on the prosomeric model. Trends Neurosci. 36:570-578.
213. Moreno-Bravo JA, Perez-Balaguer A, Martinez-Lopez JE, Aroca P, Puelles L, Martinez S, Puelles E. (2013) Role of Shh in the development of molecularly-characterized tegmental nuclei in mouse rhombomere 1. Brain Struct Funct 219:777-792

2014

214. Morales-Delgado N, Castro-Robles B, Ferrán JL, Martínez-de-la-Torre M, Puelles L, Díaz C. (2014) Regionalized differentiation of CRH, TRH and GHRH peptidergic neurons in the mouse hypothalamus. Brain Struct Funct 219:1083-1111
215. Puelles L. (2014) Development and evolution of the claustrum. Chapter 5 in: Functional Neuroanatomy of the Claustrum. (Smythies J., Ramachandran V.S.. Edelstein L, eds). New York, Academic Press; pp.119-176.
216. Sánchez-Guardado L.Ó., Puelles L., Hidalgo-Sánchez M. (2014) Fate map of the chicken otic placode. Development doi:10.1242/dev.101667.
217. Pattabiraman K., Golonzhka O., Lindtner S., Nord A.S., Taher L., Hoch R., Silberberg S.N., Zhang D., Zeng B.C.H., Pennacchio L., Puelles L., Visel A., Rubenstein J.L.R. (2014) Transcriptional regulation of enhancers active in protodomains of the developing cerebral cortex. Neuron doi:10.1016/j.neuron.2014.04.014
218. Puelles L, Martínez S, Martínez-de-la-Torre M, Rubenstein J.L.R. (2014) Gene maps and related histogenetic domains in the forebrain and midbrain. Chapter 1 in: The Rat Nervous System, Fourth Edition (Paxinos G., ed), New York, Academic Press/Elsevier. pp.3-24.
219. Puelles L, Fernández B, Martinez-de-la-Torre M. (2014) Neuromeric landmarks in the rat midbrain, diencephalon and hypothalamus, compared with acetylcholinesterase histochemistry. Chapter 2 in: The Rat Nervous System, Fourth Edition (Paxinos G., ed), New York, Academic Press/Elsevier pp.25-43.
220. Tomás-Roca L, Corral-San-Miguel R, Aroca P, Puelles L, Marín F. (2014) Crypto-rhombomeres of the mouse medulla oblongata, defined by molecular and morphological features. Brain Structure and Function 2014 Nov 9. [Epub ahead of print]

2015

221. Puelles L. (2015) Genoarchitectonic brain maps. In: Brain Mapping: An Encyclopedic Reference. (A.Toga, K.Zilles & K.Amunts, eds). London, Elsevier. (in press).
222. Ferran J.L., Ayad A., Merchán P., Morales-Delgado N., Sánchez-Arrones L., Alonso A., Sandoval J.E., Bardet S., Corral-San-Miguel R., Sánchez-Guardado LÓ., Hidalgo-Sánchez M., Martínez-de-la-Torre M., Puelles L. (2015) Exploring brain genoarchitecture by single and double chromogenic in situ hybridization (ISH) and immunohistochemistry (IHC) in whole-mount embryos. In: "In situ hybridization Methods" (Hauptmann G., ed.), within the series Neuromethods (Wolz, W., editor-in-chief), Springer Protocols; Berlin, Springer Science + Business Media.
223. Ferran J.L., Ayad A., Merchán P., Morales-Delgado N., Sánchez-Arrones L., Alonso A., Sandoval J.E., Bardet S., Corral-San-Miguel R., Sánchez-Guardado LÓ., Hidalgo-Sánchez M., Martínez-de-la-Torre M., Puelles L. (2015) Exploring brain genoarchitecture by single and double chromogenic in situ hybridization (ISH) and immunohistochemistry (IHC) on cryostat, paraffin, or floating sections. In: "In situ hybridization Methods" (Hauptmann G., ed.), within the series Neuromethods (Wolz, W., editor-in-chief), Springer Protocols; Berlin, Springer Science + Business Media.
224. Luis Puelles (2015) Role of secondary organizers in the evolution of forebrain development in vertebrates. Chapter in Handbook of Evolutionary Neuroscience. (S.V. Shepherd, ed) Blackwell-Wiley (in press)
225. Thompson C.L., Ng L., Menon V., Martinez S., Lee C-K., Glattfelder K., Sunkin S.M., Henry A., Lau C., Dang C., Garcia-Lopez R., Martinez-Ferre A., Pombero A., Rubenstein J.L.R., Wakeman W.B., Dee N., Hohmann J., Nguyen T-N., Jeromin A., Sodt A.J., Young R., Kidney J., Kuan L., Kaykas A., Miller J., Page D., Orta G., Bernard A., Riley Z., Smith S., Wohnoutka P., Hawrylycz M., Puelles L., Jones A.R. (2015) A high resolution spatiotemporal atlas of gene expression of the C57Bl/6J developing mouse brain. Neuron 83:309-323.

226. Díaz C, Morales-Delgado N, Puelles L (2015) Ontogenesis of peptidergic neurons within the genoarchitectonic map of the mouse hypothalamus. Front.Neuroanat. (Special Issue on Development of the Hypothalamus) 8:1-19; doi: 10.3389/fnana.2014.00162.
227. Sánchez-Arrones L, Ferrán JL, Hidalgo-Sanchez M and Puelles L (2015) Origin and early development of the chicken ADH. Front.Neuroanat. (Special Issue on Development of the Hypothalamus) 9:1-12; doi: 10.3389/fnana.2015.00007.
228. Puelles L., and Rubenstein J.L.R. (2015) A new scenario of hypothalamic organization: rationale of new hypotheses introduced in the updated prosomeric model. Front.Neuroanat. (Special Issue on Development of the Hypothalamus) 2015 Mar 19;9:27. doi: 10.3389/fnana.2015.00027. eCollection 2015.
229. Haddad-Tovolli R, P.F, Zhang Y, Zhou X, Theil T, Puelles L, Blaess S, Alvarez-Bolado G (2015) Differential Requirements for Gli2 and Gli3 in the Regional Specification of the Mouse Hypothalamus" Front.Neuroanat. (Special Issue on Development of the Hypothalamus) 2015 Mar 25;9:34. doi: 10.3389/fnana.2015.00034. eCollection 2015.
230. Ferran J.L., Puelles L and Rubenstein J.L.R. (2015) Molecular codes defining rostrocaudal domains in the embryonic mouse hypothalamus. Front.Neuroanat. (Special Issue on Development of the Hypothalamus) doi: 10.3389/fnana.2015.00046.
231. Nagalski A., Dabrowski M., Wegierski T., Puelles L., Kuznicki J., Wisniewska M.B. (2015) Molecular anatomy of the thalamic complex and the underlying transcription factors. Brain Structure and Function. May 12. [Epub ahead of print] DOI: 10.1007/s00429-015-1052-5.
232. Puelles L., Merchán P., Morales-Delgado N., Castro B., Díaz C., Ferran J. L. (2015) Diagonal area origin and tangential migratory dispersion of telencephalic somatostatin neurons in the mouse. Brain Structure and Function (submitted).
233. Puelles, L., Ayad, A., Sandoval, J.E., Alonso, A., Medina, L., Ferran J.L. (2015) Selective early expression of the orphan nuclear receptor Nr4a2 identifies the claustrum homolog in the avian mesopallium; impact on sauropsidian/mammalian pallium comparisons. J.Comp.Neurol. (submitted)