

# Cajal Medals and Plaques

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## The Work and Life of Cajal through his Medals and Plaques

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The aim of this essay is to introduce some of the most important medals and plaques made in honour of Santiago Ramón y Cajal. Several of them were accompanied by a prize or were coined by colleagues or societies to commemorate the work of Cajal while he was alive. Others were coined after his death in memoriam of his work. We have associated each medal and plaque with a corresponding period in the life and work of Cajal. Some of the characteristics of each item are described in the legend of each figure and, where possible, we have added data such as the artist's name, manufacturer and number of coined items (Figures 1 and 2).



**Figure 1:** Cajal plaque cast in bronze, signed C. Velázquez. No date, 6.2 x 8.7 cm. Private collection.



**Figure 2:** Cajal ceramic medal signed by Victorio Macho, who was born in Palencia (Spain) in 1887 and was one of the most famous Spanish sculptors of the 20th century. Among his vast work is the monument to Cajal in the Retiro Park in Madrid made in 1926 and a bust of Cajal sculpted in bronze. Victorio Macho was a republican and, after the Spanish Civil War (1936-9), found exile in Paris, Bogotá and finally Lima in 1940. In 1952 he returned to Toledo (Spain), where he settled and lived until his death in 1966. Macho's work is on exhibition at the Victorio Macho's Museum at the Roca Tarpeya in Toledo (Spain) and in many other important museums around the world. This medal served as a model to make the medal shown in Figure 3. No date. Diam. 22 cm. Private collection.

To commemorate Cajal's birthday on 1 May 1852, in Petilla de Aragón (a small village of Navarra in the north of Spain), several medals were coined; two of the most significant are shown in Figures 3 and 4.



**Figure 3:** Porcelain medal in commemoration of the Cajal's 1st Centenary. Obverse: bust of Cajal with legend 'S. Ramon Cajal. 1852-1934'. Reverse: signature of the manufacturer PB ('Porcelanas Bidasoa') of Irún (Spain), the serial number and the legend 'Primer Centenario de Santiago Ramon y Cajal. 1 de Mayo 1952' (First Centenary of Santiago Ramon y Cajal. 1 May 1952). In total, 200 medals were made. Diam. 13 cm. Private collection.



**Figure 4:** Bronze medal in commemoration of the Cajal's 1st Centenary. Obverse: bust of Cajal with the legend '*Santiago Ramon y Cajal. I Mayo MDCCCLII-MCMLII*', signed by V. Nava (or V. Navarro). Reverse: allegory of the science and wisdom, with the legend '*Al gran histólogo en su primer centenario MCMLII*' (To the great histologist in his first centenary). Diam. 6 cm. Private collection.

Cajal started his scientific career whilst Professor of Histology in Valencia from 1885 to 1887. During this period he published a series of papers on general histology and microbiology. From 1887 to 1892 Cajal was a Professor of Anatomy in Barcelona, during which time he published many fundamental articles about the nervous system using the Golgi method. This body of work can be roughly divided into four groupings: his important modifications of the Golgi method and new silver staining techniques; the description the organization of the cerebellum in embryonic and young chickens; the study of vertebrate retinal organization; and the organization of the spinal cord. In these diverse articles, Cajal studied the organization of climbing fibers, the development of Purkinje neurons and of basket cell axons around their soma, the organization of the spinal cord and of the retina, all of which allowed to him to establish his neuronal theory. Whilst in Barcelona, Cajal also published the books *Manual de Histología Normal y Técnica Micrográfica* (Manual of Histology and Micrographic Technique) in 1889 and *Manual de Anatomía Patológica General* (Manual of Basic Anatomical Pathology) in 1890, and the monograph '*La rétine des vertébrés*' (The retina of vertebrates) in 1892. In 1888, Cajal was awarded the gold medal at the World Exhibition held in Barcelona for the excellence of his micrographic preparations presented at that exhibition (Figures 5 and 6).



**Figure 5:** Silver-coated medal coined in commemoration of the '*Exposición Universal*' (Universal Exhibition) of Barcelona in 1888. Reverse: view of the '*Palacio de Bellas Artes*' (Palace of Fine Arts) where the exhibition was held. Diam. 1.8 cm. Private collection.



**Figure 6:** Bronze medal commemorating the 'Exposición Universal' (Universal Exhibition) of Barcelona in 1888. Obverse: busts of the King Alfonso XIII (aged two year and President of the Exhibition) and of María Cristina, his mother and Regent Queen, with the legend 'Exposición Universal de Barcelona. 1888' (Universal Exhibition of Barcelona. 1888). Signed by the artists A. Solá and E. Arnaum. Reverse: view of the Palace of Fine Arts where the exhibition was held, two allegoric angels and a frame to engrave the name of the people receiving the award. As already mentioned, the medal was coined in bronze, but the crown with a bat was melted in bronze, silver or gold making the distinction. Diam. 5 cm. Manufactured by Castells (Barcelona, Spain). Private collection.

Cajal considered the year 1888 to be the most important of his scientific career for two fundamental reasons. First was his improvement of Golgi staining and second, the use of the improved Golgi method to study immature tissue. Originally, the tissue was placed in a potassium dichromate-osmium tetroxide solution and then in silver nitrate following fixation; the soma and processes of single nervous cells appeared in black over a yellow background. The chemical nature of the silver deposit (mostly silver chromate) and the triggering factor that provokes precipitation still remain unknown. As a result, only a small percentage of the total neurons are stained, the number, type and amount of deposit resulting in many cases being random. The improvement made by Cajal consisted in repeating these two post-fixation steps. The new procedure, called the double Golgi stain, was fundamental in obtaining more consistent results and a more complete and detailed staining of elements of the nervous system. Paradoxically, as a consequence of this improved staining, the study of preparations became more complex due to the increased number of stained cells, making the study of single cells more difficult. Cajal wrote in his *Recollections of My Life* (1917): "¡Qué belleza la de las preparaciones obtenidas tras la precipitación del bicromato de plata depositado en exclusiva en los elementos nerviosos! Pero de otra parte, ¡qué tupidos bosques revelaban, en los que era difícil descubrir las terminaciones de su intrincado ramaje!" (What beauty is shown in the preparations obtained by the precipitation of silver dichromate deposited exclusively onto the nervous elements! But, on the other hand, what dense forests are revealed, in which it is difficult to discover the terminal endings of its intricate branching). He quickly realized that the solution to this problem was to study immature tissue: "Puesto que la selva adulta resulta impenetrable e indefinible, ¿por qué no recurrir al estudio del bosque joven, como, si dijéramos, en estado de vivero?" (Given that the adult jungle is impenetrable and indefinable, why not study the young forest, as we would say in its nursery stage). He began to study Golgi-impregnated tissue from embryos and young animals.

His work on the organization of vertebrate retina began in 1888, with a series of articles on bird retina. In 1892, Cajal published 'La rétine des vertébrés' in the prestigious journal *La Cellule*. A recompilation of these works was included in the French version of the *Histology of the Nervous System of Man and Vertebrates* (see below). In 1933, a facsimile of the original *La Cellule* paper was printed in commemoration of the XIV Concilium Ophthalmologicum Hispania (Spanish Congress of Ophthalmology), held in Madrid together with the casting of a bronze plaque (Figure 7).



**Figure 7:** Bronze plaque coined in 1933 in commemoration of the *XIV Concilium Ophthalmologicum Hispania* (Spanish Congress of Ophthalmology), held in Madrid. Obverse: the bust of Cajal and some cells types of the vertebrate retina with the legend 'La Retina MDCCLXXXII', S. Ramon y Cajal. *XIV Concilium Ophthalmologicum Hispania MCMXXXIII*, signed Mariano Benlliure. Mariano Benlliure Gil (1862-1947) was a Spanish artist born in Valencia. Many of his numerous sculptures and paintings are exhibited in Madrid and in the Benlliure's museum in Crevillente (Alicante, Spain). This plaque was accompanied by a facsimile edition of 'La rétine des vertébrés', published originally in *La Cellule* in 1892. 6.5 x 5.5 cm. Private collection.

In 1892, Cajal became Chair of Anatomy in Madrid, where he completed his study of the fine structure of the vertebrate nervous system (including man). In 1975, a medal was coined commemorating the publication of a series of conferences given at the Academy of Medical Sciences in Barcelona, entitled 'El nuevo concepto de las histología de los centros nerviosos' (New concept of the histology of the nerve centres) published in the *Revista de Ciencias Médicas* (1892) (Figures 8 and 9).



**Figure 8:** Silver medal coined in 1975 in commemoration of Cajal's life and work up to 1892. Obverse: bust of Cajal, signed by Abram Belskie, with the legend 'Santiago Ramón y Cajal. Charting the Nervous System'. Reverse: an allegory of human life, a ventral view of the human brain showing the cranial nerves with the legends 'Nuevo Concepto de la Histología de los Centros Nerviosos' (New Concept of the Histology of Nerve Centres) and 'Emergence of Cranial Nerves from the Brain'. Abram Belskie (1907-88) was a sculptor and medallist born in London. He was a member of the New York Medical College. His work can be found in many American museums such as the Belskie Museum in New Jersey, the Museum of Natural History in New York and the Cleveland

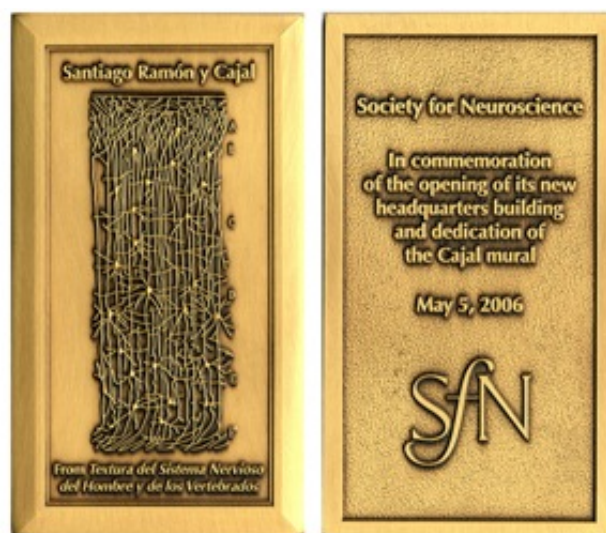
Museum of Health. Diam. 4.5 cm. Manufactured by Medallion Art Co. (New York). Private collection.



**Figure 9:** Bronze medal manufactured by Medallion Art Co. (New York) in 1975. Same legend as in Figure 8. Diam. 4.5 cm. Private collection.

This preliminary work was later revised and published as 'Les Nouvelles Idées sur la Structure du Système Nerveux chez l'Homme et chez les Vertébrés' (1894), which would form the groundwork for his most important scientific book, *Textura del Sistema Nervioso del Hombre y de los Vertebrados*. The first edition of the Textura was formally published in 1899 (vol. 1) and in 1904 (vols. 2 and 3), and contained a detailed description of the cytoarchitecture and organization of the central nervous system of man and vertebrates. This book was translated into French by L. Azoulay during the period 1909-11 (*Histologie du Système Nerveux de l'Homme et des Vertébrés*) and more recently into English by N. and L. W. Swanson in 1995, and by P. and T. Pasik in 2000. A translation and modernization of his findings concerning the organization of the cerebral cortex was made by J. DeFelipe and E.G. Jones in 1988 (*Histology of the Nervous System of Man and Vertebrates*).

In 2006, a bronze plaque was coined commemorating the new headquarters building of the Society for Neuroscience containing a reproduction of a figure representing the histology of human cerebral cortex of the Textura (Figure 10).



**Figure 10:** Bronze plaque coined in 2006 in commemoration of the opening of the new headquarters building of the Society for Neuroscience. Obverse: a reproduction of a drawing by Cajal, representing several types of Golgi-stained neurons representative of different cortical layers of the cerebral cortex from 20 day-old mice with the legend 'Santiago Ramón y Cajal. From *Textura del Sistema Nervioso del Hombre y de los Vertebrados*' (*Histology of the Nervous System of Man and Vertebrates*). Reverse: the legend 'Society for Neuroscience. In commemoration of the

opening of its new headquarters building and dedication of the Cajal mural. May 5, 2006. SFN'. No artist's signature. 9 x 5 cm. Courtesy of Prof. Javier DeFelipe. Private collection.

In 1903, he started a new period of research, with the publication of a series of articles describing mainly the neurofibrillar system, endoplasmic reticulum and the Golgi apparatus of neurons. During this period, Cajal developed new methods, particularly the reduced silver and gold chloride staining techniques. The most important studies were on the regeneration and degeneration of nerves that were summarized in another masterpiece of neuroscience, the book *Estudios sobre la Degeneración y Regeneración del Sistema Nervioso* (1913-1914), translated into English by R. M. May in 1928 (*Degeneration and Regeneration of the Nervous System*) and recently re-edited with additional notes by DeFelipe and Jones in 1991. An additional study *Études sur la Neurogenèse de Quelques Vertébrés* (1929) was also translated into English by Ll. Guth in 1960 (*Studies on the Neurogenesis of Some Vertebrates*).

In 1904, Cajal received the Hermann von Helmholtz Prize from the Imperial Academy of Sciences of Berlin (Figure 11).



**Figure 11:** Gold medal coined in Germany in 1905 in commemoration of the Helmholtz Prize. Obverse: bust of Hermann von Helmholtz, signed by Jos Tautenhayn. Reverse: a plaque with the name of Santiago Ramón y Cajal with the legend 'Helmholtz Stiftung' (Foundation Helmholtz). MDCCCXXI. XXXI August. MDCCCXCI. Jos Tautenhayn was sculptor and medallist born in Vienna in 1837. In 1862, he was nominated master engraver and Professor of the Academy of Fine Arts in Vienna. Some of his sculptures are in the University and Parliament of Vienna. Diam. 9 cm. From 'Santiago Ramón y Cajal, Expedientes Administrativos de Grandes Españoles'. Ministerio de Educación y Ciencia (Spain).

Cajal was very proud to receive this award and he wrote: "quedé pasmado al saber que la susodicha medalla se otorgaba cada dos años al autor que hubiere dado cima a más importantes descubrimientos en cualquiera rama del saber humano" (I was stunned to know that this medal is awarded every two years to the author of the most important discoveries in any of the fields of human knowledge). Other recipients of the prestigious prize had been R. Virchow (1898), C. G. Stockes (1900), H. Becquerel (1908) and J. H. van Hoff (1912). In 1906, Cajal received the Nobel Prize accompanied by a commemorative medal (Figure 12).



**Figure 12:** Gold medal coined in Sweden in 1906 in commemoration of the Nobel Prize. Obverse: bust of Alfred Nobel with the legend 'Nat. MDCCCXXXIII. Ob. MDCCCXCVI', signed E. Lindberg. Reverse: allegory of wisdom, a plaque with the name 'Santiago Ramón y Cajal' and the legend 'Inventam vitas iuvat excoluisse per artes. Reg. Universitas Med.-Chir. Carol.' Erik Lindberg (1873-1966) was a famous Swedish sculptor and medallist. Diam. 7 cm. From 'Santiago Ramón y Cajal, Expedientes Administrativos de Grandes Españoles'. Ministerio de Educación y Ciencia (Spain).

He received the prize for his many contributions to the study of the nervous system and for his demonstration of the individuality of neurons. During his Nobel ceremony discourse, Cajal showed many examples demonstrating the two fundamental concepts necessary to understand the function of the nervous system: the neuron theory and the law of polarity of neurons (that neurons are contiguous and that nerve impulses travel from the dendrites and soma to the nerve endings). The lecture was entitled 'Structure et Connexions des Neurones' and was published in 1907.

A series of medals were coined in commemoration of Cajal's Nobel Prize. Among these, Cajal particularly appreciated the medal that Spaniards living in the Argentine Republic awarded him in 1907. Later in 1917, Cajal wrote: "El premio Nobel con que el Instituto Carolino de Estocolmo se dignó recompensar mis escasos méritos científicos, fue, entre los médicos de raza española. Ocasión de patrióticos y entusiastas testimonios de afecto y consideración. Pero entre los homenajes recibidos, ninguno más honroso, por su forma delicada y espiritual, que el tributado al humilde hombre de ciencia por los compatriotas médicos de la República argentina" (The Nobel Prize of the Karolinska Institut of Stockholm honored me for my few scientific discoveries for which many Spanish doctors offered me patriotic and enthusiastic testimonials of kindness and consideration. However, among the tributes I received, none was so honorable, for its delicate and spiritual style, as that tribute to a humble man of science made by fellow doctors from the Republic of Argentina). The medal was coined in gold; however, an unknown number of bronze medals were also made for friends and collectors (Figures 13 and 14).





**Figure 13:** Gold medal coined by the Republic of Argentina in 1907 in commemoration of the Nobel Prize. Obverse: bust of Cajal signed by Mariano Benlliure. Reverse: legend 'Al mérito científico por el premio Nobel de Fisiología y de Medicina concedido en MCMVII (*sic*). Los españoles amantes del progreso' (For the scientific merit of the Nobel Prize of physiology and medicine given in MCMVII (*sic*). The Spanish Lovers of Progress). Diam. 7 cm. From 'Santiago Ramón y Cajal, Expedientes Administrativos de Grandes Españoles'. Ministerio de Educación y Ciencia (Spain).



**Figure 14:** Bronze medal coined in 1907 in commemoration of the Nobel Prize. Same legend as in Figure 13. Limited edition for friends and collectors. Diam. 7.2 cm. Private collection.

Copies of the bronze medal were coined by the Cajal Club in commemoration of the Krieg Kudos and Cortical Discoverers Awards (Figure 15).



**Figure 15:** Bronze medal coined in 2001 in commemoration of the Cajal Club Krieg Achievement Award presented to Prof. Constantino Sotelo. The medal is a copy of that shown in Figure 14. Diam. 7.2 cm. Private collection.

Other medals were also coined in commemoration of Cajal's Nobel Prize (Figures 16-20), the most significant being a medal made by the Spanish ceramic artist Juan Ruiz de Luna (Figure 16). In the 1970s, two medals were coined for collectors, and in 2003 another medal was coined in commemoration of the 'Instituto de Neurociencias de Alicante', Spain (Figure 19).



**Figure 16:** Ceramic medal manufactured in Talavera de la Reina (Toledo, Spain) during 1908-1910. Obverse: bust of Cajal, signed by Mariano Benlliure. Reverse: signature of the ceramic artist Ruiz de Luna. Juan Ruiz de Luna and Enrique Guijo established the Ruiz de Luna ceramic factory in 1908 in Talavera de la Reina (Toledo, Spain). Juan Ruiz de Luna, first in collaboration with E. Guijo and later in collaboration with some of his sons, produced the most important pieces of ceramic with the modern denomination of Talavera de la Reina. Juan Ruiz de Luna died in 1945. His collection can be seen at the Ruiz de Luna museum 'La ciudad de la Cerámica' (City of Ceramics) in Talavera. This medal served as a model to make the medal shown in Figure 7. Diam. 15 cm. Private collection.



**Figure 17:** Bronze medal coined in 1973 to commemorate Nobel laureates. Obverse: bust of Cajal, signed José de Moura, with the legend 'Ramon y Cajal. 1852-1934'. Reverse: representation of a motoneuron with the legend 'Premio Nobel de Medicina. 1906. Estrutura do Sistema Nervoso' (Nobel Prize of Medicine. 1906. Structure of the Nervous System). This medal served as a model to make the medal shown in Figure 31. Diam. 8 cm. Private collection.



**Figure 18:** Silver medal coined during the years 1975-78 as a series of medals to commemorate Spanish Nobel laureates manufactured by Acuñaciones Españolas S.A. (now, Acuñaciones Euroexport, S.L., Barcelona). Obverse: bust of Cajal with the legend 'S. Ramon y Cajal. Premio Nobel de Fisiología y Medicina, 1906' (S. Ramon y Cajal, Nobel Prize in Physiology and Medicine. 1906). Reverse: artistic representation of the nervous tissue with the legend 'Excolere victum hominum'. Edition for medal collectors. Diam. 5 cm. Private collection.



**Figure 19:** Silver medal coined in 2003 in commemoration of the 'Instituto de Neurociencias de Alicante' (Spain). Obverse: bust of Cajal with the legend 'S. Ramon y Cajal. Premio Nobel de Fisiología y Medicina, 1906' (S. Ramon y Cajal, Nobel Prize in Physiology and Medicine. 1906). Reverse: anagram of the 'Instituto de Neurociencias de Alicante' with the legend 'CSIC – Universitas Miguel Hernández'. In total, 200 medals were manufactured by Acuñaciones Euroexport, S.L. (Barcelona). Diam. 5 cm. Private collection.



**Figure 20:** Bronze plaque sponsored by Signe S.A. (Tres Cantos, Madrid, Spain) in 2005 to commemorate the Cajal's Nobel Prize. Obverse: bust of Cajal with the legend '1906-2006, Primer Centenario de la Concesión del Premio Nobel de Fisiología y Medicina a D. Santiago Ramón y Cajal.' (1906-2006. First Centenary of the Nobel Prize in Physiology and Medicine Awarded to D. Santiago Ramón y Cajal). No artist's signature. The medal was manufactured by Fundiciones y Matricería, S.L. (Madrid, Spain). In total 2000 plaques were made. 13 x 9 cm. Private collection.

In 1966, the Spanish Federation of Photographic Art coined a medal in commemoration of Cajal's book *La Fotografía de los Colores* (*The Photography of Colors*) published by Cajal in 1912 (Figure 21). The book describes the scientific basis and practical rules governing color photography. The work, divided in three parts, classified different photographic procedures, discussing their scientific foundations and went on to describe different ways to obtain color using filters and chemicals, as well as ways of obtaining photographic positives.



**Figure 21:** Gold medal coined in 1966 by the Spanish Federation of Photographic Art in commemoration of the book *La Fotografía de los Colores*, published in 1912. Obverse: legend 'Al Mérito Fotográfico' (For Photographic Merit). Reverse: the legend 'Grupo Nacional de Producción Fotográfica. Federación Española de Arte Fotográfico' (National Group of Photography. Spanish Federation of Photographic Art). At the bottom, 'Excmo. Sr. Santiago Ramón y Cajal'. From 'Santiago Ramón y Cajal, Expedientes Administrativos de Grandes Españoles'. Ministerio de Educación y Ciencia (Spain).

In 1922, Cajal received the Medal of Echegaray for Scientific Merit (Figure 22). The lecture given by Cajal was published in the Annals of the Spanish Academy of Sciences. In the last paragraph of the lecture he wrote: "España no alcanzará su pleno florecimiento cultural y político, mientras los docentes de todos los grados no acierten a fabricar, en cantidad suficiente (hoy son centenas y sería preciso que sumasen centenares de miles), el español que nos hace mucha falta, es decir, un tipo humano tan impersonal por abnegado, tan firme y entero de carácter, tan tolerante y abierto a todas las ideas, tan esforzado y constante en sus empeños, tan agudamente sensible a nuestros infortunios que, reaccionando pujantemente contra las causas de nuestro atraso y de nuestros errores, consagrara lo mejor de sus energías y de sus luces a la prosperidad del país." (Spain will not fully blossom culturally and politically, whilst teachers at all levels are not able to form, in sufficient quantity - today there are hundreds and hundreds of thousands that will be needed - the Spaniard that we so much need, that is, a self-sacrificing person, firm and rounded in character, tolerant and open to all ideas, hard-working and constant in his tasks, so sharply aware of our problems that, strongly reacting against the causes of our set backs and errors, he will dedicate the best of his energies and ideas to the prosperity of the country.)



**Figure 22:** Gold medal coined in 1922 by the Spanish Royal Academy of Sciences in

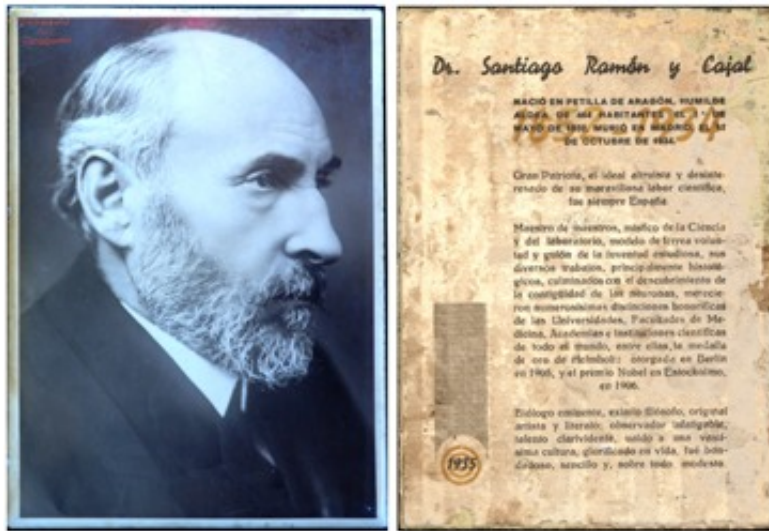
commemoration of the Echegaray Prize. Obverse: the bust of José Echegaray, signed by E. Maura. Reverse: legend 'Al mérito científico. Premio instituido por la Real Academia de Ciencias Exactas, Físicas y Naturales de Madrid, en honor de su presidente don José Echegaray. 13 de Marzo de 1905. S. Ramón y Cajal, 1922' (For scientific merit. Prize founded by the Royal Academy of Mathematics, Physics and Natural Sciences of Madrid in honor of its president Don José Echegaray, 13 March 1905, S. Ramón y Cajal, 1922). Diam. 7 cm. From 'Santiago Ramón y Cajal, Expedientes Administrativos de Grandes Españoles'. Ministerio de Educación y Ciencia (Spain).

In 1934, Cajal died in Madrid. Shortly before his death Cajal wrote: "Gran estímulo para los jóvenes el saber que el tajo es inagotable y que todos pueden, si lo desean firmemente, transmitir su nombre a la posteridad." (Great stimulus for young researchers to know that the job is endless and all can, if they really wish, pass their name on to posterity.) He died at the same time as the III International Congress of Thorax Diseases was being held in Barcelona. The organizers coined a medal in his honour (Figure 23).



**Figure 23:** Silver-coated medal coined in 1934 by the American College of Chest Physicians in commemoration of the III International Congress of Thorax Diseases held in Barcelona. Obverse: bust of Cajal with the legend 'III Congreso Internacional de Enfermedades del Torax. Ramón y Cajal, Premio Nobel Medicina 1906' (III International Congress of Thorax Diseases. Ramón y Cajal, Nobel Prize of Medicine 1906), American College of Chest Physicians. Reverse: view of the 'Palacio Nacional de Montjuich' (National Palace of Montjuich), and the coat of arms of Barcelona. The medal was sponsored by the Leti-Uquifa laboratories. Diam. 3.5 cm. Private collection.

A ceramic plaque in commemoration of Cajal was also manufactured in 1935 (Figure 24),



**Figure 24:** Ceramic plaque sponsored by the Ceregumil laboratories (Spain) in 1935. Obverse: photo-lithograph made by Guevara (Granada) from a negative by Padró taken from a self-portrait of Cajal when he was 60 years old. Reverse: legend 'Dr. Santiago Ramón y Cajal. Nació en Petilla de Aragón, pueblo humilde de 464 habitantes, el 1º de mayo de 1852, murió en Madrid el 17 de octubre de 1934. Gran patriota, el ideal altruista y desinteresado de su maravillosa labor científica, fue siempre España. Maestro de maestros, místico de la Ciencia y del laboratorio, modelo de férrea voluntad y guión de la juventud estudiosa, sus diversos trabajos, principalmente histológicos, culminados con el descubrimiento de la contigüidad de las neuronas, merecieron numerosísimas distinciones honoríficas de las Universidades, Facultades de Medicina, Academias e Instituciones científicas de todo el mundo, entre ellas la medalla de oro de Helmholtz, otorgada en Berlín en 1908, y el premio Nobel en Estocolmo, en 1906. Biólogo eminente, eximio filósofo, original artista y literato; observador infatigable, talento clarividente, unido a una vastísima cultura, glorificado en vida, fue bondadoso, sencillo y, sobre todo, modesto' (Dr. Santiago Ramón y Cajal. Born in Petilla de Aragón, humble village of 464 inhabitants, the 1st May 1852, died in Madrid the 17th October 1934. Great patriot, the altruistic and unselfish ideal of his marvellous scientific labour, was forever Spain. Master of masters, mystic of Science and the laboratory, model of strong willpower and script of the student young people, his diverse works, mainly histological, culminated with the discovery of the contiguity of neurons, deserve many honorific awards of the Universities, Faculties of Medicine, Academies and Scientific Institutions around the world, among them, the gold medal of Helmholtz, given in Berlin in 1905, and the Nobel Prize in Stockholm in 1906. Eminent biologist, distinguished philosopher, original artist and writer; indefatigable observer, clear-sighted talent, with a very vast culture, honoured during his life, he was kind-hearted, ordinary and, above all, modest). The plaque is 13 x 18 cm. Private collection.

and in more recent times several medals have been coined (Figures 25-33).



**Figure 25:** Bronze medal coined in 1976 in commemoration of the 8th European Philips Contest for Young Scientist and Inventors held in Madrid (Spain). Obverse: bust of Cajal with the legend 'Santiago Ramón y Cajal. Premio Nobel de Medicina. 1906' (Santiago Ramón y Cajal. Nobel Prize in Medicine. 1906). Reverse: a symbol of the contest with the legend '8º Concurso Europeo Philips para Jóvenes Científicos e Inventores. Madrid. Mayo 1976' (8th European Philips Contest for Young Scientists and Inventors. Madrid. May 1976). No artist signature. Diam. 5.5 cm. Private collection.



**Figure 26:** Silver medal coined in 1978 in commemoration of the work of Cajal. Obverse: bust of Cajal, signed Manolo Prieto, with the legend 'Santiago Ramón y Cajal, 1852-1934'. Reverse: a dorsal view of the human central and peripheral nervous system with the legend 'Vivir Conforme a las Normas de la Ciencia y del Arte' (Live According to the Rules of Science and Art). The medal was manufactured by Acuñaciones Taber S.A. (Barcelona, Spain). Diam. 4 cm. Private collection.





**Figure 27:** Bronze medal coined by the Spanish Society of Histology in commemoration of the I National Congress of Histology held in Zaragoza (Spain) in 1979. Obverse: bust of Cajal with the legend 'Santiago Ramon y Cajal. 1852-1934'. Reverse: a schema of a section of the cerebellum with the legend 'I Congreso Nacional de Histología' (I National Congress of Histology), Zaragoza. 5-VII-1979. No artist signature. Diam. 6 cm. Private collection.



**Figure 28:** Bronze medal coined in 1982 in commemoration of the work of Cajal. Obverse: bust of Cajal, signed Armindo Viseu. Reverse: legend 'S. Ramón y Cajal, 1852-1934. Jovem turbulento nato em Espanha exerce medicina entre os humildes. Vocacionado para a Investigação consagrou-se na histologia do sistema nervoso. Nobel em 1906' (S. Ramón y Cajal, 1852-1934. Turbulent young man born in Spain, doctor to humble people, with a vocation for research, deeply interested in the histology of the nervous system. Nobel at 1906). 500 of these medals were manufactured by Gravarte (Lisbon, Portugal). Diam. 7 cm. Private collection.



**Figure 29:** Bronze medal coined in 1991 by the 'Consejo Superior de Investigaciones Científicas' (CSIC; Spanish National Research Council) to honour people who had served the CSIC for a long period of time. This medal was also coined in gold and silver, they are presented to leading members of the society. Obverse: bust of Cajal with the legend 'Santiago Ramon y Cajal. 1852-1934', signed Parés. Reverse: a representation of the CSIC coat of arms, the tree of science, signed Celada. Diam. 8 cm. Private collection.



**Figure 30:** Bronze medal coined by the 'Consejo Superior de Investigaciones Científicas' (Spanish National Research Council) in 1997. This medal is a reproduction of that shown in Figure 29. Diam. 3.7 cm. Private collection.



**Figure 31:** Aluminium alloy medal. Obverse: bust of Cajal with the legend 'Santiago Ramon y Cajal.

1852-1934'. Reverse: a schematic representation of the formula of the tolueuthiol; a chemical probably used to make Golgi sections more transparent before mounting on a microscope slide. No artist's signature. Diam. 4 cm. Private collection.



**Figure 32:** Bronze medal coined in 2002 by the Hospital Ramón y Cajal in Madrid in commemoration of the 25th anniversary of its foundation. Obverse: bust of Cajal, signed by Garnero, with the legend 'Hospital Ramón y Cajal. Todo hombre puede ser, si se lo propone, escultor de su propio cerebro. Santiago Ramón y Cajal' (Ramón y Cajal Hospital. Every man can, if he so desires, sculpt his own brain. Santiago Ramón y Cajal). Reverse: reproduction of a fragment of Cajal's signature with the legend 'XXV Aniversario' (XXV Anniversary). Diam. 9 cm. Private collection.



**Figure 33:** Silver medal coined in 2003 by the Regional Government of Aragón in commemoration of the 150th anniversary of Cajal. Obverse: bust of Cajal, signed by José M<sup>a</sup> Martínez Murillo, with the legend 'Santiago Ramón y Cajal. 1852-1934. CL Aniversario'. Reverse: a reproduction of a drawing by Cajal, representing several types of Golgi-stained neurons of the human cerebral cortex. 150 of these medals were manufactured by Acuñaciones Euroexport, S.L. (Barcelona). Diam. 4 cm. Private collection.

The most significant of these are coined to honour relevant members of the society (Figure 26), by the Spanish Society of Histology in commemoration of the I National Congress of Histology held in Zaragoza (Spain) (Figure 27), by the 'Consejo Superior de Investigaciones Científicas' (CSIC - Spanish National Research Council; Figures 29 and 30) and, finally, by the Regional Government of Aragón in commemoration of the 150th anniversary of Cajal (Figure 33).

Other medals and plaques made in honour of Cajal have been made; among these are a bronze

plaque from the Academy of Medicine and Pharmacy of Rome (1894), a gold medal from the IX International Congress of Hygiene held in Madrid (1897) and a bronze plaque offered by the students of Madrid in commemoration of the Helmholtz Prize (1905).

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