

Scientific Programme 44th Workshop in Inner Ear Biology

University College London , 16 – 19 September 2007

All sessions will be held in the Kennedy Lecture Theatre,
UCL Institute of Child Health, 30 Guilford Street, London WC1

The poster display areas will be in the atrium and meeting rooms near the lecture theatre

Sunday September 16th

Symposium: Nerve, Ear, and Synapse: Emerging ideas in sensory-neural hearing impairment

9.45-10.00		Welcoming remarks
10:00-10:30	S1	The Genetics of Human Auditory Neuropathies <u>Ignacio del Castillo</u>
10.30-11:00	S2	The molecular machinery for exocytosis at IHC ribbon synapses <u>Saaid Safieddine</u>
11:00 -11:30		BREAK
11:30-12:00	S3	The function of the IHC ribbon synapse <u>Tobias Moser</u>
12:00-12:30	S4	Dysfunction of synaptic sensory inner hair cell -afferent and –efferent complex: a putative source for the generation of tinnitus <u>Jean-Luc Puel</u>
12:30 -14:00		Lunch
14:30 -15:30	S5	Hyperactivity in the dorsal cochlear nucleus: Evolution of a chronic tinnitus model <u>James A. Kaltenbach</u>
15:00-15:30	S6	Molecular approaches to tinnitus <u>Marlies Knipper</u>
15:30 -16:00		BREAK
16:00 -16:30	S7	Investigating differences in outcome for cochlear implantees <u>Colette McKay</u>
16:30 -17:00	S8	Perspectives on Auditory Neuropathy: Disorders of inner hair cell, auditory nerve, and their synapse <u>A Starr</u>
17:00 - 17:15		General Discussion
		End of Symposium
18:00 – 19:30		IEB 2007 Opening Reception
		UCL Ear Institute, 332 Gray's Inn Road, London WC1

44th Inner Ear Biology Workshop

Monday September 17th

9.25 - 9.30. **Welcome and Introduction to the workshop**
Jonathan Ashmore

Session 1: Cochlear genetics and development

- 9.30 - 9.45 O1 Identification of microRNAs in the Developing Cochlea and Vestibule
Lilach M. Friedman, Ginat Toren, Takunori Satoh, Ronna Hertzano, Martin Irmeler, Johannes Beckers, Eran Hornstein, Donna M. Fekete, and Karen B. Avraham
- 9.45 -10.00: O2 Mosaic complementation of the shaker1 allele suggests a novel role for myosin VIIa in hair cell stereocilia
Agnieszka K. Rzadzinska and Karen P. Steel
- 10.00 -10.15 O3 Hair cell differentiation becomes tissue specific by E9.5 in mouse inner ear
Tatsunori Sakamoto, Juichi Ito and Raj Ladher
- 10.15 -10.30 O4 Calbindin and S100 protein expression in the developing auditory system in mice.
Buckiova D. and Syka J
- 10.30 -10.45 O5 Characterization of a spontaneous recessive mutation arising in the mouse Tecta gene: A model for DFNB21 hearing loss
Miguel Ángel Moreno-Pelayo, Richard J. Goodyear, Angeles Mencía, Silvia Modamio-Høybjør, Kevin Legan, Leticia Olavarrieta, Felipe Moreno, and Guy P Richardson
- 10.45 -11.15 BREAK**
- Session 2 Hair cells 1: Motility**
- 11.15 -11.30 O6 Outer hair cell somatic rather than hair bundle motility is the basis of the cochlear amplifier
Marcia Mellado Lagarde, Markus Drexler, Andrei N. Lukashkin and Ian J. Russell
- 11.30 -11.45 O7 Salicylate and chlorpromazine induce nanoscale curvature changes in the outer hair cell plasma membrane
Jennifer N. Greeson and Robert M. Raphael
- 11.45 -12.00 O8 Frequency Effect on Charge Transfer by Prestin: Insight from an Electro-Diffusion Model
Sean X. Sun, Matthew S. Chana, George Oster, William E. Brownell, and Alexander A. Spector
- 12.00 -12.15 O9 Prestin's state dependence of anion binding
Santos-Sacchi J and Song L
- 12.15 -13.30 LUNCH**
- POSTER SESSION 1 (odd numbers) 13.30-14.30**
- Session 3 Hair Cell Damage and Otoprotection**
- 14.30 -14.45 O10 Mechanism of Age-Related Hearing Loss
Donald Henderson, Eric Bielefeld, Guang-di Chen and Wei Ping Yang
- 14.45 -15.00 O11 Otoprotection strategies against Cisplatin induced ototoxicity
Guiscardo Lorito, Pietro Giordano, Sathiyaseelan Theneshkumar, Alessandro Martini and Stavros Hatzopoulos
- 15.00 -15.15 O12 Styrene ototoxicity and its protection
Guang-Di Chen, Chiemi Tanaka, Weiping Yang and Donald Henderson
- 15.15 -15.30 O13 TNF- α exposure initiates apoptosis of auditory hair cells that can be prevented by dexamethasone: Mechanisms
Thomas R Van De Water, Scott Haake, Shibing Chen, Christine Dinh, Xiaoyun Nong, Adrien A Eshraghi, and Thomas J Balkany
- 15.30 -16.00 BREAK**

Session 4 Hair Cell Damage and Otoprotection 2

- 16.00 -16.15 O14 BDNF protects against Pseudomonas aeruginosa Exotoxin A -induced hearing loss
Adnan Lidian, Leif Nordang, Monika Stenkvisst-Asplund, Birgita Linder and Matti Anniko
- 16.15 -16.30 O15 In the newborn rat cochlea, HSP70 is upregulated on a transcriptional and translational level during normoxic and hypoxic culture conditions
Agnieszka J. Szczepek, Johann Gross and Birgit Mazurek
- 16.30 -16.45 O16 Adenosine signalling in the cochlea: an emerging role in neuroprotection
SM Vlajkovic, CX Guo, R Gupta, GD Housley and PR Thorne
- 16.45 - 17.30 **The EuroHear Lecture:**
Regulation of cell division and patterning in the regenerating inner ear
Mark Warchol

Tuesday September 18th

Session 5 Cochlear mechanics

- 9.30 -9.45 O17 Longitudinal change in the role of organ of Corti mass in cochlear tuning
Ombeline de La Rochefoucauld and Elizabeth S. Olson
- 9.45 -10.00 O18 Negative damping of the cochlear non-linear mechanical responses
Andrei N. Lukashkin, Mark N. Walling and Ian J. Russell
- 10.00-10.15 O19 Combined electric and acoustic stimulation in the cochlea of the guinea pig
H. Christiaan Stronks, Huib Versnel, Vera F. Prijs and Sjaak F.L. Klis
- 10.15-10.30 O20 Nonlinearity and origin of the round window recorded cochlear microphonic potential
Alfred L. Nuttall, Jiefu Zheng, Yuan Zou, Fangyi Chen and Tianying Ren
- 10.30-10.45 O21 Aminoglycoside & Acoustic Ototoxicity in Meriones Unguiculatus
Nneka Eze and Elizabeth S Olson

10.45-11.15

BREAK

Session 6 Cochlear homeostasis

- 11.15-11.30 O22 The dynamic characteristics of human organ of Corti homeostasis as inferred from post noise-burst OAE level fluctuations
David Kemp and Oliver Brill
- 11.30-11.45 O23 Unitary permeability of gap junctions channels expressed in HeLa cells
Victor H. Hernandez, Mario Bortolozzi, Saida Ortolano and Fabio Mammano
- 11.45-12.00 O24 Expression of Aquaporins and Vasopressin type 2 receptor in the lateral wall of the Cochlea and Inner Ear Fluid homeostasis
Takeda T, Nishioka R, Kakigi A, Nishimura M, Okada T, Takeda S and Taguchi D
- 12.00-12.15 O25 Bridging the epithelial membrane barrier: Potassium spatial buffering by Kir4.1/AQP4
B. Hirt, C. Gleiser, A. Eckhard1, M. Müller, H. Wolburg and H. Löwenheim
- 12.15-12.30 O26 Coordinated control of Cx26 and Cx30 at the regulatory and functional level in the outer sulcus region
Saida Ortolano, Giovanni Di Pasquale, Giulia Crispino , Fabio Mammano, and John A. Chiorini

12.30-13.45		LUNCH
13.45-14.45		POSTERS 2 (even numbers)
		Session 7 Mitochondria
14:45 -15:00	O27	Normal outer hair cell function contrasts with impaired function of auditory neurons in Friedreich ataxia due to faulty mitochondria <u>Fabrice Giraudet</u>, Alain Martelli, Hélène Puccio, Odile Boespflug-Tanguy, Thierry Mom and Paul Avan
15.00-15:15	O28	Use of fluorescent imaging techniques to assess mitochondrial function in cochlear explants and slices <u>Zoe F. Mann</u>, Michael R. Duchon, Daniel J. Jagger and Jonathan E. Gale
15.15-15.30	O29	Stress-induced changes in mitochondrial peroxiredoxin in mouse cochlear hair cells <u>Fuguan Chen</u>, Su-Hua Sha and Jochen Schacht
15.30-16.00		BREAK
		Session 8 Stem Cell Therapies
16.00-16.15	O30	Synapse formation between embryonic stem cell-derived neurons and auditory hair cells in vitro <u>Masahiro Matsumoto</u>, Takayuki Nakagawa, Ken Kojima, Tatsunori Sakamoto and Juichi Ito
16.15-16.30	O31	Bone Marrow Derived Cells in Inner Ear Repair Brian T Tan and <u>Runsheng Ruan</u>
16.30-16.45		IEB Business Meeting
19:00 - 22.30		Conference Dinner
		The UnderGlobe, Shakespeare Globe Theatre, Bankside London SE1
		Reception 19:00 Guided tours of the theatre 18:30 -19:00
		Coaches leave for St Paul's Cathedral at 17:30 from Guilford Street.

Wednesday September 19th

Session 9. Hair cells 2: Transducer and Synapse

- 9.30 -9.45 O33 Transducer Gating in the Drosophila Ear
Joerg T. Albert, Bjoern Nadrowski and Martin C. Goepfert
- 9.45 -10.00 O34 Defects In The Atp2b2 Gene Causing Hereditary Hearing And Balance Loss In Mice And Humans: A Functional Study Of Normal And Mutated PMCA2 Pumps
M. Bortolozzi, R. Ficarella, F. Di Leva, S. Ortolano, S.L. Spiden, A. Lelli, G.E. Shull, M. Brini, P. Gasparini, KP Steel, E. Carafoli and F. Mammano
- 10.00-10.15 O35 Calcium, Calmodulin-dependent Regulation of Inner Hair Cell Calcium Channels
Lisa Grant and Paul A. Fuchs
- 10.15-10.30 O36 Voltage-Gated Channels and Scaffolding Proteins Define Compartments in the Vestibular Calyx Ending
Anna Lysakowski, Sophie Gaboyard, Shilpa Chatlani, Steven D. Price, Ruth Anne Eatock and Jay M. Goldberg

10.30-11.00 BREAK

Session 10 Synapse and Nerve

- 11.00-11.15 O37 HCN Channels Shape the Time Course of Postsynaptic Potentials at the Inner Hair Cell Afferent Synapse
Eunyoung Yi and Elisabeth Glowatzki
- 11.15-11.30 O38 Instantaneous Rate vs Instantaneous Amplitude curves of Auditory Nerve Fibres are in close agreement with the transduction in the cilia of Inner Hair Cells.
J. Wiebe Horst, JoAnn McGee and Edward Walsh
- 11.30-11.45 O39 Tonotopic frequency mapping on the basilar membrane of the Chinchilla (*Chinchilla laniger*) measured by labelling auditory nerve fibres with HRP and biocytine
Jean Smolders, Silvi Hoidis and Marcus Müller
- 11.45-12.00 O40 Neural and receptor cochlear potentials in auditory neuropathy obtained by transtympanic electrocochleography (ECochG)
Rosamaria Santarelli, Arnold Starr, Henry J Michalewski and Edoardo Arslan

12:00 End of IEB 2007

Posters IEB 2007

(Posters will be displayed on Monday and Tuesday from 9 am all day with timetabled discussion as indicated in the programme. The order below does not reflect the order in which the posters will be displayed. For poster assignments see listing of abstracts, and the index)

Effects of defensins on frog semicircular canal: evidence of interaction between the immune and nervous systems.

Andrianov GN, Nozdrachev AD and Ryzhova IV

Interaction between Cochlear Cells and Bone Marrow Cells

Susumu Baba, Hiroshi Iwai, Shinryu Lee, Mariko Omae, Susumu Ikehara, Toshio Yamashita

Evidence for K⁺ recycling in an organotypic model of mouse utricle.

S. Bartolami, M. Cavalier, Z. Ouaray and Ch. Chabbert

Age-related changes in the cochlear nucleus of C57BL/6J mouse.

Maria Visitación Bartolome.

Actin dynamics in avian sensory epithelia.

Jonathan Bird^{1,2}, Nicolas Daudet² & Jonathan Gale^{1,2}.

All-or-none delayed spike burst elicited by synaptic activation of unipolar brush cells in the vestibulo-cerebellum

Luisa Bottà, Sergio Masetto, Gianpiero Zucca and Egidio D'Angelo

Effects of hypothyroidism and lack of thyroid hormone receptors alpha and beta on the expression of Ca_v1.3 and BK channels

Brandt N,¹ Münkner S,¹ Braig C,² Winter H,² Knipper M,² Engel J¹

A comparison of the cochlear and vestibular effects of gentamicin and kanamycin/furosemide co-treatment in guinea pigs

H.G. Bremer, H. Versnel, J.C.M.J. de Groot, F.W.J. Albers, S.F.L. Klis

Comparison of GAD levels in the inferior colliculus and auditory cortex of two rat strains during aging

Burianová Jana, Ouda Ladislav, Profant Oliver, Syka Josef

Expression of Histamine Receptors in the Mammal Vestibule

Sophie Gaboyard-Niay, Cécile Travo and Christian Chabbert

Illuminating the dynamics of the Notch signalling pathway during inner ear development

Elena Chrysostomou and Nicolas Daudet

Modulation of cell-cell and cell-extracellular matrix interactions during neuroblast migration

D. Davies and C. Nobes

Identifying Target Genes of the Hair Cell POU-Domain Transcription Factor Brn-3c

Emily Towers, Chrysostomos Tornari, Jonathan Gale and Sally Dawson

Expression of glycine receptors and gephyrin in the rat cochlea

Julia Długaiczek¹, Wibke Singer³, Bernhard Schick¹, Heinrich Iro¹, Kristina Becker², Cord-Michael Becker², Marlies Knipper³

Src inhibition prevents the initial cochlear damage induced by cisplatin chemotherapy

Fetoni¹ AR, Paludetti¹ G, Hu² BH, GD Chen², Henderson² D.

Role of Coenzyme Q10 and his hydrosoluble multicomposite, Coenzyme Q10 terclatrate, in protection against noise induced hearing loss.

Fetoni AR, Fiorita A, La Greca C, Rizzo D, Troiani¹ D, Paludetti G.

Hair cell loss in connexin 30 deficient mice is accompanied by anomalous epithelial repair patterns.

Andrew Forge¹, Regina Nickel¹, Ruth Taylor¹, Daniel Jagger¹, Shoeb Ahmad², Wenxue Tang², Xi Lin²

Three-dimensional organisation of cytoskeletal components in the sensory epithelia of the inner ear.

Andrew Forge¹, Ruth Taylor¹,

A Subtractive Hybridization Strategy to Identify Barhl1 Target Genes in Sensory Hair Cells

Valentina Gburcik, Jonathan Gale and Sally Dawson

Scanning electron microscope imaging as a good supportive method in cisplatin induced ototoxicity.

Pietro Giordano, Sathiyaseelan Theneshkumar, Guiscardo Lorito, Alessandro Martini and Stavros Hatzopoulos.

Effect of noise exposure on middle latency response amplitudes in rats.

Grécová J, Popelář J, Syka J

Prevention of Accelerated Presbycusis by Maintenance of Systemic Immune Functions

Hiroshi Iwaj, Susumu Baba, Shinryu Lee, Mariko Omae, Susumu Ikehara, Toshio Yamashita

Connexin 30 trafficking to the plasma membrane via a Golgi-independent pathway

John Kelly, Regina Nickel, Andrew Forge, Daniel Jagger

Effects of thyroid hormone deficiency on Ca²⁺ currents and exocytosis in cochlear inner hair cells

Stephanie Kuhn¹, Claudia Braig², Stefan Münkner¹, Harald Winter², Marijes Knipper² and Jutta Engel¹

ERK1/2 activation in support cells during hair cell damage is a common signalling mechanism that may contribute to hair cell death

Manuela Lahne and Jonathan Gale

Association of HLA-DRB1*1101 allele with bilateral Meniere's disease in mediterranean population

Jose A. Lopez-Escamez¹, Herminio Perez-Garrigues², Jose R Vilchez², Andres Soto-Varela³, Sofia Santos-Perez³, Ismael Aran⁵, Miguel A. Lopez-Nevot²

Development of a bioreactor system aiming at the in vitro culture of the functionally mature Organ of Corti

H. Arnold, A. Müller, M. Müller, H. Löwenheim

AQP4 and Kir4.1 are colocalized in distinct supporting cell populations of the rat cochlea

A. Eckhard^{1,2}, B. Hirt^{1,2}, C. Gleiser^{1,2}, M. Müller¹, H. Löwenheim¹

Functional analysis of water flow in cochlea supporting cells

C. Gleiser^{1,2}, B. Hirt^{1,2}, A. Eckhard¹, M. Müller¹, H. Löwenheim

Noise trauma in the guinea pig

M. Müller¹, M. Tisch², H. Maier², B. Hirt¹, H. Löwenheim¹

Methodological study for isolation of stem cells from the spiral ganglion

S. Sandke, K. Aulwurm, J. Waldhaus, A. Gharabaghi, H. Löwenheim

Nestin expression in the organ of Corti during embryonic and postnatal development

J. Waldhaus¹, H. Winter¹, B. Hirt^{1,2}, M. Müller¹, H. Löwenheim¹

Dynamics of Fgf3 expression in the developing mouse inner ear

Androulla Economou, Stephanie Cadot and Mark Maconochie

Effect of interference tones on DPOAE level/phase maps in rabbits

GK Martin^{1,2}, BB Stagner¹, T Fleck³, PF Fahey⁴, BL Lonsbury-Martin^{1,2}

A computationally based large scale model of potassium flow in the cochlea

Pavel Mistrík¹, Peter Saffrey¹, Chris Mullaley¹, Renato Nobili², Fabio Mammano² and Jonathan Ashmore^{1,3}

Upregulation of erythropoietin and erythropoietin receptor mRNA in organ of Corti, modiolus and stria vascularis of newborn rats

Mazurek B, Haupt H, Amarjargal N, Machulik A, Moller R, Ungethüm¹ U, Kuban¹ RJ, Szczepek, AJ, Gross J

The role of prestin and the tectorial membrane in the generation of electrically evoked otoacoustic emissions in mice.

Markus Drexel^{1,2}, Marcia Mellado Lagarde¹, Jian Zuo³, and Ian J. Russell¹

Number, Design and Function of Hair Cell Synapses along the Tonotopic Axis of the Cochlea
Alexander C. Meyer¹, Darina Khimich¹, Alexander Eigner², Youri Yarine³, Tobias Moser¹

Ionic currents through Ca_v1.3 Ca²⁺ channels in mature mouse inner hair cells under mobile phone field exposure

S. Münkner¹, A. El Ouardi², J. Streckert², R. Vonthein³, V. Hansen², J. Engel¹

Differential modulation of Ca_v1.3 Ca²⁺ channels by Ca²⁺ binding proteins and significance for auditory hair cell function

Guiying Cui^{1*}, Alexander Meyer^{2*}, Irina Calin-Jageman¹, Jakob Neef², Françoise Haeseleer³, Tobias Moser², and Amy Lee¹

MOLECULAR CORRELATES OF TINNITUS IN THE AUDITORY SYSTEM: BDNF, Arg 3.1, AND THE ROLE OF GABA

Rama Panford-Walsh¹, Wibke Singer¹, Lukas Rüttiger¹, Hyun-Soon Geisler¹, Ulrike Zimmermann¹, Iris Köpschall¹, Karin Rohbock¹, Elmar Oestreicher², Helen Haas¹ and Marlies Knipper¹

Expression patterns of erythropoietin and erythropoietin receptor in the spiral ganglion of guinea pig after noise exposure

Jae Yong Park, MD, Dong-Hyun Kim, MD, Ah Young Kim, MD, and Yong Ho Park, MD, PhD

Expression patterns of KCNJ10 K⁺ channel in the cochlear lateral wall after acoustic trauma

Yong Ho Park, MD, PhD, Jae Yong Park, MD, and Ah Young Kim, MD

Presence and Characteristics of Spontaneous Otoacoustic Emissions in Children and adolescents

Pelánová J^{1,2}, Groh D^{1,2}, Popelář J¹, Kabelka Z², Syka J¹.

Mitotracker staining of mitochondria in outer hair cells of the guinea pig cochlea

Jim Pickles, Hema Indrasamy

Mouse pharmacological models of sensorineural hearing loss.

Poirrier AL, Kim TS, Vandenbosch R, Nguyen L, Lefebvre PP, Malgrange B.

Prestin self-association, lateral mobility and membrane cholesterol

Louise E. Organ, Jennifer N. Greeson, and Robert M. Raphael

Computational Model of Ion Transport in the Stria Vascularis

Imran Quraishi and Robert M. Raphael

Targeted Disruption of Otoa with EGFP demonstrates otoancorin is required for adhesion of the tectorial membrane to the spiral limbus.

P. Kevin Legan¹, Lindsey Welstead¹, Richard J. Goodyear¹, Christine Petit² and Guy P. Richardson¹

Studying the distribution of inositol phospholipids in sensory hair cells with EGFP-tagged reporter constructs

Gowri D. Nayak, Richard J. Goodyear and Guy P. Richardson

NO-cGMP pathway and hearing loss

Lukas Rüttiger, Robert Feil*, Susanne Feil* and Marlies Knipper

AGE-RELATED CHANGES IN THE RAT AUDITORY SYSTEM

Natalia Rybalko, Jana Pelanová, Stanislava Hamsová, Josef Syka

Which interstereocilia links can be found in disorganized hair bundles of cadherin 23 mutants?

Agnieszka K. Rzadzinska, Karen P. Steel

IDENTIFICATION OF IGF-I TARGET GENES IMPLICATED IN INNER EAR DEVELOPMENT AND FUNCTIONAL MATURATION

Hortensia Sanchez-Calderon^{1,2}, Lourdes Rodriguez de la Rosa¹, Marta Milo² Jose R. Pichel³, Matthew Holley² and Isabel Varela-Nieto¹

Noise stress in a Otoprotective strategy against Cisplatin induced Ototoxicity

Sathiyaseelan Theneshkumar, Stavros Hatzopoulos, Guiscardo Lorito, Pietro Giordano, Sara Magosso, Lucia Bertolaso, Alessandro Martini.

Relationship between Accelerated Presbycusis and Immunosenescence

Shinryu Lee, Hiroshi Iwai, Susumu Baba, Mariko Omae, Susumu Ikehara, Toshio Yamashita

Identification of markers for pathological neuronal plasticity changes in the auditory system

Singer W, Rüttiger L, Panford-Walsh R, Reinbothe T, Rohbock K, Knipper M

Expression and immunolocalization of aquaporin-6 (Aqp6) in the rat inner ear

Daizo Taguchi^a, Taizo Takeda^b, Akinobu Kakigi^b, Teruhiko Okada^c, Rie Nishioka^b, Hiroya Kitano^d

Effects of Aging on Inner Ear Morphology in Dogs Related to Brainstem Responses to Pure-Tone Auditory Stimuli

G. ter Haar¹, J.C.M.J. de Groot², A.J. Venker-van Haagen¹, W.E. van den Brom¹, F.J. van Sluijs¹ and G.F. Smoorenburg²

An atypical cell during development of the auditory organ : the inner pillar cell.

Nicolas Thelen, Brigitte Malgrange and Marc Thiry

Delivery of brain-derived neurotrophic factor to the guinea pig cochlea using Gelfoam

Versnel H, Sedee RJ, Agterberg MJH, De Groot JCMJ, Albers FWJ, Klis SFL

Speech-in-noise intelligibility does not correlate with efferent olivocochlear reflex in humans with normal hearing

Wolfgang Wagner, Kathrin Frey, Guido Heppelmann

Different appearance of apoptosis caused by platinum-derived anti-cancer drugs in the vestibule of guinea pig

Ken-ichi Watanabe, Shuta Inai, Ken-Jinnouchi, Hess Alexander, Olaf Michel, Toshiaki Yagi

Expression of osmotically responsive cationic channel TRPV4 in the endolymphatic sac

H. Kumagami, M. Terakado, Y. Saino, A. Baba, D. Fujiyama, K. Takasaki, H. Takahashi

Human Cytomegalovirus and Factors Involved in Neurogenesis

Jane C. Murphy and John H. Sinclair

Role of Ca²⁺ binding proteins in hair cell presynaptic function

Tina Pangršič¹, Nicola Strenzke^{1,2}, Beat Schwaller³, Tobias Moser¹

Region-specific transcriptional expression of neurotrophin-family genes in the cochlea of newborn rat

Gross J, Szczepek AJ, Amarjargal N, Machulik A, Fuchs J, Ungethüm¹ U, Kuban¹ RJ, Haupt H, Mazurek B