Graduate School of Neuroscience

and

Wilhelm Johannsen Centre for Functional Genome Research,
University of Copenhagen

Ph.d.-Course "Functional Genomics in Neuroscience"
(*ECTS points = 3*)

April 18-19, 2005

Panum Institute
Monday 18/4: Room 21.1.18
Tuesday 19/4: "Sofastuen/lille mødesal" (Building 5)
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Course director: Niels Tommerup
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How to get to the Panum Institute: see http://www.wjc.ku.dk/travel/

Programme

18 April 2005		
8.30-9.00	**Niels Tommerup**	*Welcome, Coffee, Introduction, Short presentation by the students*
9.00-10.00	**Merete Fredholm** The Royal Veterinary and Agricultural University, Copenhagen (KVL)	*Strategies for sequencing a novel genome: The pig genome*
10.00-11.00	**Evan Eichler** University of Washington, WA	*Structural Variation of the Human Genome*
11.00-12.00	**Huanming Yang** Beijing Genomics Institute, Chinese Academy of Sciences	*The International HapMap Project*
12.00-13.00	*Lunch*	
13.00-14.00	**Evan Eichler** University of Washington, WA	*Segmental Duplications and Human Genome Evolution: The Chimp Human Perspective*
14.00-15.00	**David Carter** Cardiff School of Biosciences, UK	*Transcriptional profiling of neuronal systems using DNA arrays.*
15.00-15.30	*Coffee*	
15.30-16.30	**Nikolaj Blom** Center for Biological Sequence Analysis, Danish Technical University, Lyngby	*Gene Discovery Search Strategies*
19 April 2005		
8.30-9.00	**Niels Tommerup**	Coffee, Short presentation by the students
9.00-10.00	**Huanming Yang** Beijing Genomics Institute, Chinese Academy of Sciences	*Chinese Genetics*
10.00-11.00	**Morten Møller** Inst.Med.Anatomy University of Copenhagen	*Visualization of Circadian oscillations*
11.00-12.00	**Kasper Lage Hansen** Center for Biological Sequence Analysis, Danish Technical University, Lyngby	*Disease gene finding using large scale protein interaction network clustering, and phenotype association*
12.00-13.00	*Lunch*	
13.00-14.00	**David Carter** Cardiff School of Biosciences, UK	*Transcriptome analysis in transgenic rat models*
14.00-15.00	**Torben Kruse** University of Southern Denmark	*Strategies to identify susceptibility genes for psychiatric disorders*
15.00-15.30	*Coffee*	
15.30-16.30	**Niels Tommerup** Wilhelm Johannsen Centre for Functional Genome Research, University of Copenhagen	*Functional characterization of the human genome by chromosomal rearrangements*

Functional Genomics in Neuroscience

Teachers/Abstracts/Links

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Recent publications

Jorgensen FG, Hobolth A, Hornshoj H, Bendixen C, Fredholm M, Schierup MH. Comparative analysis of protein coding sequences from human, mouse and the domesticated pig. BMC Biol. 2005 Jan 28;3(1):2.

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Recent publications

Kirsch S, Weiss B, Miner TL, Waterston RH, Clark RA, Eichler EE, Munch C, Schempp W, Rappold G. Interchromosomal segmental duplications of the pericentromeric region on the human Y chromosome. Genome Res. 2005 Feb;15(2):195-204. Epub 2005 Jan 14.

Martin J, et al. The sequence and analysis of duplication-rich human chromosome 16. Nature. 2004 Dec 23;432(7020):988-94.

Hillier LW, et al International Chicken Genome Sequencing Consortium. Sequence and comparative analysis of the chicken genome provide unique perspectives on vertebrate evolution. Nature. 2004 Dec 9;432(7018):695-716.

She X, Jiang Z, Clark RA, Liu G, Cheng Z, Tuzun E, Church DM, Sutton G, Halpern AL, Eichler EE. Shotgun sequence assembly and recent segmental duplications within the human genome. Nature. 2004 Oct 21;431(7011):927-30.

Schmutz J, et al. The DNA sequence and comparative analysis of human chromosome 5. Nature. 2004 Sep 16;431(7006):268-74.

Bailey JA, Eichler EE. Genome-wide detection and analysis of recent segmental duplications within mammalian organisms. Cold Spring Harb Symp Quant Biol. 2003;68:115-24.

She X, Horvath JE, Jiang Z, Liu G, Furey TS, Christ L, Clark R, Graves T, Gulden CL, Alkan C, Bailey JA, Sahinalp C, Rocchi M, Haussler D, Wilson RK, Miller W, Schwartz S, Eichler EE. The structure and evolution of centromeric transition regions within the human genome. Nature. 2004 Aug 19;430(7002):857-64.

Khaitovich P, Muetzel B, She X, Lachmann M, Hellmann I, Dietzsch J, Steigele S, Do HH, Weiss G, Enard W, Heissig F, Arendt T, Nieselt-Struwe K, Eichler EE, Paabo S. Regional patterns of gene expression in human and chimpanzee brains. Genome Res. 2004 Aug;14(8):1462-73.

Huanming Yang

Professor of Genetics, and Director of Beijing Genomics Institute, Chinese Academy of Sciences and Director of Huada Genomics Research Center. His interests include the mapping and cloning of human genes, sequencing and analysis of the human genome, human genome diversity and evolution, as well as the ethical, legal, and social issues related to

genome research. As coordinator in China of the International Human Genome Sequencing Consortium, Prof Yang is one of the main players in China's effort in human genome sequencing. Among a number of other high-level positions, Prof Yang is a member of the Expert Panel of the National Office for Administration on Genetic Materials, and the Expert Committee of Field of Life Sciences, National Programs on Hightech ("863"), China. He is also a member of the Planning Group on ELSI in Human Genetics, WHO, the International Bioethics Committee, UNESCO, and the Expert Group on Biotech for the High Commissioner on Human Rights, UN. Chinese coordinator, international Hapmap project.
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Recent publications

Yu Jun,Hu Songnian, Wan Jun, Li Songgang, Wong Ka-Shu Gane, Liu Bim, Deng Yajun, Dai Li, Zhou Yan, Zhang Xiuqing, Cao Mengliang,Liu Jing,...and Yang Huanming. A draft sequence of the rice genome (Oryza sativa ssp. indica). Science 2002;296:79-92.

International Human Genome Sequencing Consortium (Yang H. as an author from Beijing Genomics Institute). Initial sequencing and analysis of the human genome. Nature 2001;409:860-921.

Qiyu Bao, Yuqing Tian, Wei Li, Zuyuan Xu, Zhenyu Xuan, Songnian Hu, Wei Dong, Jian Yang, Yanjiong Chen, Yanfen Xue, Yi Xu, Xiaoqin Lai,...and Yang Huanming. A Complete Sequence of the T. tengcongensis Genome. Genome Research 2002;12:689-700.

Wang Jian, Li Wei, Xu Zuyuan, Li Yan, Wu Qingfa, Lin Wei, Cheng Weijun, Tang Lin, Deng Yajun, Han Yujun, Li Changfeng,...and Yang Huanming. A complete sequence and comparative analysis of a SARS-associated virus(Isolate BJ01). Chinese Science Bulletin 2003;48:941-948.

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Recent publications

Humphries,A., Klein,D.C., Baler,R and **Carter,D.A.** (2002) cDNA array analysis of pineal gene expression reveals circadian rhythmicity of the dominant negative helix-loop-helix protein-encoding gene, Id-1. ***Journal of Neuroendocrinology*** **14**, 101-108

Slade,J.P., Man,P.S., Wells,T. and **Carter,D.A.** (2002) Stimulus-specific induction of an egr-1 transgene in rat brain. ***Neuroreport*** **13**, 671-674

Carter D.A. (2003) Editorial review : Selecting candidate genes from DNA array screens - application to neuroscience. ***METHODS*** (in press).

Man,P.S. and **Carter,D.A.** (2003) Oestrogenic regulation of an egr-1 transgene in rat anterior pituitary. ***Journal of Molecular Endocrinology*** **30**, 187-193

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Recent publications

Kiemer L, Bendtsen JD, Blom N. NetAcet: prediction of N-terminal acetylation sites. Bioinformatics. 2004 Nov 11; [Epub ahead of print].

Hjerrild M, Stensballe A, Rasmussen TE, Kofoed CB, Blom N, Sicheritz-Ponten T, Larsen MR, Brunak S, Jensen ON, Gammeltoft S. Identification of phosphorylation sites in protein kinase A substrates using artificial neural networks and mass spectrometry. J Proteome Res. 2004 May-Jun;3(3):426-33.

Diella F, Cameron S, Gemund C, Linding R, Via A, Kuster B, Sicheritz-Ponten T, Blom N, Gibson TJ. Phospho.ELM: a database of experimentally verified phosphorylation sites in eukaryotic proteins. BMC Bioinformatics. 2004 Jun 22;5(1):79.

Kiemer L, Lund O, Brunak S, Blom N. Coronavirus 3CLpro proteinase cleavage sites: possible relevance to SARS virus pathology. BMC Bioinformatics. 2004 Jun 06;5(1):72.

Blom N, Sicheritz-Ponten T, Gupta R, Gammeltoft S, Brunak S. Prediction of post-translational glycosylation and phosphorylation of proteins from the amino acid sequence. Proteomics. 2004 Jun;4(6):1633-49. Review.

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Recent publications

Gaildrat P, Moller M, Mukda S, Humphries A, Carter DA, Ganapathy V, Klein DC. A novel pineal-specific product of the oligopeptide transporter pept1 gene: Circadian expression mediated by cAMP activiation of an intronic promoter. J Biol Chem. 2005 Jan 31; [Epub ahead of print]

Baeres FM, Moller M. Demonstration of PACAP-immunoreactive intrapineal nerve fibers in the golden hamster (Mesocricetus auratus) originating from the trigeminal ganglion. J Pineal Res. 2005 Mar;38(2):116-22.

Kim JS, Coon SL, Blackshaw S, Cepko CL, Moller M, Mukda S, Zhao WQ, Charlton CG, Klein DC. Methionine adenosyltransferase:adrenergic-cAMP mechanism regulates a daily rhythm in pineal expression. J Biol Chem. 2005 Jan 7;280(1):677-84. Epub 2004 Oct 25.

Munch IC, Moller M, Larsen PJ, Vrang N. Light-induced c-Fos expression in suprachiasmatic nuclei neurons targeting the paraventricular nucleus of the hamster hypothalamus: phase dependence and immunochemical identification. J Comp Neurol. 2002 Jan 1;442(1):48-62.

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Recent publications

Bak M, Hansen C, Henriksen KF, Hansen L, Pakkenberg H, Eiberg H, Tommerup N. Mutation analysis of the Sonic hedgehog promoter and putative enhancer elements in Parkinson's disease patients. Brain Res Mol Brain Res. 2004 Jul 26;126(2):207-11.

Hertz JM, Sivertsen B, Silahtaroglu A, Bugge M, Kalscheuer V, Weber A, Wirth J, Ropers HH, Tommerup N, Tumer Z. Early onset, non-progressive, mild cerebellar ataxia co-segregating with a familial balanced translocation t(8;20)(p22;q13). J Med Genet. 2004 Mar;41(3):e25.

Bak M, Hansen C, Tommerup N, Larsen LA. The Hedgehog signaling pathway--implications for drug targets in cancer and neurodegenerative disorders. Pharmacogenomics. 2003 Jul;4(4):411-29. Review.

Kalscheuer VM, Tao J, Donnelly A, Hollway G, Schwinger E, Kubart S, Menzel C, Hoeltzenbein M, Tommerup N, Eyre H, Harbord M, Haan E, Sutherland GR, Ropers HH, Gecz J. Disruption of the serine/threonine kinase 9 gene causes severe X-linked infantile spasms and mental retardation. Am J Hum Genet. 2003 Jun;72(6):1401-11. Epub 2003 May 07.

Bugge M, Bruun-Petersen G, Brondum-Nielsen K, Friedrich U, Hansen J, Jensen G, Jensen PK, Kristoffersson U, Lundsteen C, Niebuhr E, Rasmussen KR, Rasmussen K, Tommerup N. Disease associated balanced chromosome rearrangements: a resource for large scale genotype-phenotype delineation in man. J Med Genet. 2000 Nov;37(11):858-65.