

Curriculum vitæ

Vincent Chi Kwan Cheung

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Education

- 2000–07 **Ph. D.**, Neuroscience and Biomedical Engineering
Division of Health Sciences and Technology (Medical Engineering and Medical Physics Division),
Harvard Medical School and Massachusetts Institute of Technology, Cambridge, MA, USA
Thesis advisor: Emilio Bizzi, Institute Professor, MIT
- 1996–2000 **B. Sc.**, Combined Honours in Mathematics, and Pharmacology & Therapeutics, with minor in Arts (Music)
University of British Columbia, Vancouver, BC, Canada
- 1997 **L. R. S. M.** (Licentiate of the Royal Schools of Music), Piano Performance
Associated Board of the Royal Schools of Music, London, UK

Research Positions Held

- 2/2007–pres. Postdoctoral Fellow
McGovern Institute for Brain Research, Massachusetts Institute of Technology, Cambridge, MA
Mentors: Ki Ann Goosens, Assistant Professor of Neuroscience, MIT
Emilio Bizzi, Institute Professor, MIT
- 9/2001–06 Graduate Research Assistant
Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology, Cambridge, MA
Mentor: Emilio Bizzi
- 6–8/2001 Summer Research Assistant
Neuroscience Statistics Research Laboratory, Department of Anesthesia and Critical Care,
Massachusetts General Hospital, Boston, MA
Mentor: Emery N. Brown
- 6-8/1999 Summer Research Assistant
Department of Pharmacology and Therapeutics, University of British Columbia, Vancouver, BC
Mentors: Ernest Puil, and Robert Miura

Honours, Fellowships, Awards

- 2001/04/06 Fellowship in Medical Engineering and Medical Physics (MEMEP) for HST students
- 2003–04 Schoemaker Foundation Fellowship (McGovern Institute for Brain Research, MIT)
- 2002–03 Chyn Duog Shiah Memorial Fellowship (MIT Graduate Students Office)
- 2000–01 MIT Presidential Fellowship
- 2000 UBC Wesbrook Scholar Award
- 1/2000 Student Presentation Award, winter meeting of the Canadian Physiological Society
- 4/1999 UBC Faculty of Medicine Summer Research Fellowship
- 1998/99 UBC Science Scholar Award for undergraduates
- 1998 The UBC Maureta Evelyn McDonald Memorial Scholarship
- 1997/98 The UBC J. Fred Muir Memorial Scholarship in Science
- 1997 The UBC Joel Harold Marcoe Memorial Scholarship

1997	The UBC Summer Session Student Scholarship
1996	The UBC Norman MacKenzie Alumni Entrance Scholarship
1996–99	UBC Outstanding Student Initiative Scholarship
1996	Canadian Governor General Academic Medal (Bronze)

Professional Organizations

2006–pres.	International Society for the History of the Neurosciences, student member
2006–pres.	American Association for the Advancement of Science, member
2006–pres.	The Neural Control of Movement Society, student member
10/2004–pres.	Society for Neuroscience (USA), member
5/04–5/06	IEEE Engineering in Medicine and Biology Society, student member
2000	Canadian Physiological Society, student member

Professional Activities

2007-08	IEEE Engineering in Medicine and Biology Society Conference, invited reviewer
2008	<i>Ad hoc</i> reviewer for <i>European Journal of Neuroscience</i>
2009	<i>Ad hoc</i> reviewer for <i>Computational Intelligence and Neuroscience</i>

Presentations and Invited Talks

Harvard-MIT Division of Health Sciences and Technology research forum: 2002, 2003
 IEEE Engineering in Medicine and Biology Society annual international conference: 2005
 McGovern Institute for Brain Research annual retreat meetings: 2003, 2004, 2006, 2008
 Society for Neuroscience annual meetings: 2003, 2005, 2008
 Society for the Neural Control of Movement annual meetings: 2006, 2007

1/10/2009	Poster on motor learning: Crossing the Corpus Callosum: Neuroscience, Healing & the Arts (a symposium hosted by the Longwood Symphony Orchestra) Merck Research Laboratories-Boston, Boston, MA
2/18/2008	Invited Talk: Special Seminar on mechanisms of stroke recovery (Host: Prof. Emilio Bizzi) European Brain Research Institute ‘Rita Levi-Montalcini’, Rome, Italy
2/11/2008	Invited Talk: On stroke recovery and robot-assisted rehabilitation therapy (Host: Prof. Silvestro Micera) Scuola Superiore Sant’Anna, Pisa, Italy
2/7/2008	Invited Talk: Special Seminar on mechanisms of stroke recovery (Host: Dr. Lamberto Piron) San Camillo Hospital, Venice Lido, Italy
12/18/2007	Invited Talk: Motor control seminar series (Host: Prof. Bence Ölveczky) Division of Biological and Biomedical Sciences, Harvard University, Cambridge, MA
5/16/2006	Invited Talk: Computational Motor Control Seminar (Host: Prof. Michael Black) Department of Computer Science, Brown University, Providence, RI
11/15/2004	Neuroscience Seminar Series: Brain Lunch Department of Brain and Cognitive Sciences, MIT, Cambridge, MA
6/29/2004	MIT Health Sciences Research Presentations Mount Auburn Hospital, Harvard Medical School, Cambridge, MA

- 8/22/2003 Students' Research Presentation for Students in Neuroinformatics
Marine Biological Laboratory, Woods Hole, MA
- 1/2000 Research Seminar
Canadian Physiological Society Winter Meeting, Chateau Lake Louise, Alberta, Canada
- 1/2000 Student Poster Presentation
UBC Health Science Research Forum, UBC, Vancouver, BC, Canada

Teaching Positions and Awards

- 2/2006 Teaching Award: The Angus MacDonald Award for Excellence in Undergraduate Teaching
Department of Brain and Cognitive Sciences, MIT
- 9/05; 10/07 Guest Lecturer
Undergraduate course in the neuroscience of learning and memory (MIT course 9.03; dir. Suzanne Corkin)
- 9-12/2005 Teaching Assistant
Undergraduate course in clinical neuroscience (MIT course 9.22/HST.422J; dir. Thomas Byrne)
- 2-5/2005 Teaching Assistant
Undergraduate course in evolutionary neuroscience and neuroanatomy (MIT course 9.14; dir. Gerald Schneider)
- 2005–09 Guest Prosector
Introductory course in neuroanatomy (MIT course 9.97; dir. Rutledge Ellis-Behnke); undergraduate course in neuroanatomy and development (MIT course 9.14; dir. Gerald Schneider); introductory undergraduate course in neuroscience (MIT course 9.01; dir. Sebastian Seung)
- 2-5/2002 Teaching Assistant
Undergraduate course in neuroanatomy and development (MIT course 9.14; dir. Gerald Schneider)

Clinical Training

- 2001–03 M. D. courses in functional human anatomy, general pathology, medical genetics, renal pathophysiology, cardiovascular pathophysiology, pulmonary pathophysiology
Harvard Medical School (HST Society), Boston, MA
- 1-7/2004 Clinical Internship in Internal Medicine (10 weeks; supervisor: Valerie Pronio-Stelluto)
Department of Medicine and Medical Education, Mount Auburn Hospital, Harvard Medical School
- 7/2004 Clinical Internship in Geriatric Psychiatry (2 weeks; supervisor: Joseph D'Afflitti)
Mount Auburn Hospital, Harvard Medical School
- 7/2004 Clinical Internship in Neurology (2 weeks; supervisor: Linda Buchwald)
Mount Auburn Hospital, Harvard Medical School

Other Training

- 8/2003 Neuroinformatics course (dir. Emery N. Brown and Partha Mitra)
Marine Biological Laboratory, Woods Hole, MA

Publications

Peer-Reviewed Papers

1. Cheung VCK, d'Avella A, Tresch MC, Bizzi E (2005) Central and sensory contributions to the activation and organization of muscle synergies during natural motor behaviors. *Journal of Neuroscience* **25**(27): 6419-6434.
2. Cheung VCK, Tresch MC (2005) Non-negative matrix factorization algorithms modeling noise distributions within the exponential family. *Proceedings of the 27th IEEE Engineering in Medicine and Biology Society Annual International Conference* (September 1-4, 2005, Shanghai, China), 4990-4993.
3. Tresch MC, Cheung VCK, d'Avella A (2006) Matrix factorization algorithms for the identification of muscle synergies: evaluation on simulated and experimental data sets. *Journal of Neurophysiology* **95**: 2199-2212.
4. Bizzi E, Cheung VCK, d'Avella A, Saltiel P, Tresch MC (2008) Combining modules for movement. *Brain Research Reviews* **57**: 125-133.
5. Cheung VCK, d'Avella A, Bizzi E (2009) Adjustments of motor pattern for load compensation via modulated activations of muscle synergies during natural behaviors. *Journal of Neurophysiology*, **101**: 1235-1257.

Conference Abstracts

(only abstracts which have not been published as full length manuscripts)

1. Cheung VCK, Puil E (1999) Rhodium (Rh^{3+}) actions on medial geniculate body neurons. *Physiology Canada* **30**(3):155.
2. Stamoulis C, Cheung VCK, Roh J, Bizzi E (2006) Muscle coherence as a control parameter in the motor system. *Society for Neuroscience Abstracts* **448.2**.
3. Roh J, Cheung VCK, Bizzi E (2007) Construction of natural motor behaviors through combination of muscle synergies localized within the spinal cord. *Society for Neuroscience Abstracts* **926.10**: RR24.
4. Stamoulis C, Cheung VCK, Roh J, Bizzi E (2007) Multi-resolution muscle coherence estimation during natural and reflexive behaviors. *Society for the Neural Control of Movement Annual Conference Abstracts* **12**: P-04.
5. Cheung VCK, Piron L, Turolla A, Piccione F, Silvoni S, Bizzi E, Goossens K (2008) Identifying muscle synergies and genes as specific targets for stroke rehabilitation therapies through animal and human studies. *Society for Neuroscience Abstracts* **553.14**.

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