

Chloe Chung Yi Wong – Academic CV

PERSONAL DETAILS

Date of Birth 1st July 1985

Nationality British, Chinese (Hong Kong Special Administrative Region)

Work Address MRC SGDP Research Centre,
Institute of Psychiatry,
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RESEARCH SUMMARY

I am a postdoctoral research fellow working in the Psychiatric Epigenetics Group at King's College London. My main research interest is the role of epigenetic factors in psychiatric disorders, with a particular focus on Autism Spectrum Disorder (ASD). I am currently undertaking a genome-wide investigation of DNA methylation in ASD post-mortem brain tissue (*PIs: Professor Dan Geschwind, UCLA; Professor Jonathan Mill, King's College London, Exeter University*). I was recently awarded the UK Medical Research Council (MRC) Centenary Early Career Award (£15,000) to investigate dynamic DNA methylation changes in the development of autism using a longitudinal British Autism Study of Infant Siblings (BASIS) cohort.

After graduating from King's College London (University of London) in 2007 with a BSc in Pharmacology & Molecular Genomics, I was awarded a 1+3 PhD studentship from the MRC. I achieved an MSc pass with distinction in Social, Genetic and Developmental Psychiatry in 2008 and subsequently started my PhD training under the supervision of Dr Jonathan Mill and Professor Avshalom Caspi. During the course of my PhD, I investigated the role of DNA methylation differences in monozygotic and dizygotic twins in relation to psychiatric-related phenotypes including ASD and bullying victimisation. My other research interest includes the dynamicity of DNA methylation and X-chromosome inactivation during childhood development.

I have extensive experience in cutting-edge methylomic profiling approaches and bioinformatic analyses. I recently performed the first systemic genome-wide scan for DNA methylation changes associated with ASD and related phenotypic traits using discordant MZ twin samples (*in press, Molecular Psychiatry*). In addition, I have been involved in methodological advances in the field and have recently developed a pre-processing statistical pipeline for the Illumina Infinium HumanMethylation 450K microarray.

ACADEMIC QUALIFICATIONS

2012-present	PGCAP	King's College London
2008-2011	Ph.D. <i>UK MRC funded</i> Title: Exploring DNA Methylation Differences in Monozygotic and Dizygotic Twins in relation to Psychiatric Disorders	King's College London
2007-2008	MSc (Distinction) Social, Genetic and Developmental Psychiatry. <i>UK MRC funded</i>	King's College London
2004-2007	B.Sc. Hons. (2:1) Pharmacology & Molecular Genomics	King's College London, University of London

APPOINTMENTS

2011-present	Postdoctoral research fellow , MRC SGDP Centre, Institute of Psychiatry, King's College London
2006-2007	Part-time research worker , MRC SGDP Centre, Institute of Psychiatry, King's College London
2006	Summer placement student , MRC SGDP Centre, Institute of Psychiatry, King's College London

AWARDS

2010	Early Career Investigator Oral Presentation Award , XVIIIth Annual World Congress of Psychiatric Genetics 2010, Athens, Greece
2010	Young Investigator Award , 2 nd Trends in Psychiatric & Neurobiology 2010 Conference, Colorado, USA (Award covers all expenses)
2009	Early Career Investigator Travel Award to attend XVIIth Annual World Congress of Psychiatric Genetics 2009, San Diego, USA (Award covers all expenses)
2009	King's PhD/Postdoctoral Partnership Visit Grant for an 8-week visit to University of Hong Kong, Hong Kong (Grant covers all expenses)
2007-2011	1+3 MRC Funded Studentship (Studentship to cover living costs and consumables awarded by the UK Medical Research Council to study at the SGDP Centre on a MSc+PhD course)

MEMBERSHIP OF PROFESSIONAL SOCIETIES

American Society of Human Genetics

European Society of Human Genetics

The Genetics Society

TEACHING AND LECTURING

2013	Epigenetic techniques in neuroscience, MSc Neuroscience, Institute of Psychiatry, King's College London
2013	Epigenetics in Drug Addiction, MSc Neuroscience, Institute of Psychiatry, King's College London
2013	Genetic methods in addiction research, MSc Neuroscience, Institute of Psychiatry, King's College London
2013	Introductory lecture on Epigenetics, BSc Psychology, Birkbeck University, University of London
2013	Epigenetics and its application in Psychiatric disorders, MSc Psychiatry Research, King's College London
2012	Introductory lecture on Epigenetics, BSc Psychology, University College of London
2012	Complex Disease Epigenetics, MSc Biomedical & Molecular Sciences Research, King's College London
2012	Epigenetics Module, MSc Social, Genetic and Developmental Psychiatry, Institute of Psychiatry, King's College London
2012	Methods for investigating DNA methylation, MRC SGDP Summer School, Institute of Psychiatry, King's College London
2011	Epigenetics Module, MSc Social, Genetic and Developmental Psychiatry, Institute of Psychiatry, King's College London
2009	Course tutor for the 10 th MRC SGDP Summer School Bioinformatics for Geneticists
2007	Course tutor for the 8 th MRC SGDP Summer School Bioinformatics for Geneticists

RESEARCH SUPERVISION

2012-2015	Susanna Roberts, PhD Student (Second supervisor, King's College London) Helen Spiers, PhD Student (Third supervisor, King's College London)
2012-2013	Maria Papoutsis, MSc Student (Personal tutor, King's College London) Zachary Nadell, MSc Student (Personal tutor, King's College London) Chun Hao Wong, MSc Student (Personal tutor, King's College London)

2011-2012	Susanna Roberts, MSc Student (Second supervisor, King's College London)
2011	Toni Saint, BSc Student (Co-supervisor on research project, Birkbeck University, University of London)
	Jennifer Evans, BSc Student (Co-supervisor on research project, Birkbeck University, University of London)
	Christopher White, BSc Student (Co-supervisor on research project, Birkbeck University, University of London)
2010	Laura Lysenko, PhD Student (Supervisor on research rotation project, King's College London)
2009	Helena Zavos, PhD Student (Supervisor on research rotation project, King's College London)
	Nicola Barclay, PhD Student (Supervisor on research rotation project, Goldsmith University)
2007	Robert Power, BSc Student (Supervisor on summer placement project, University College of London)

ADMINISTRATIVE AND MANAGEMENT EXPERIENCE

- Responsible for the day-to-day supervision and training of PhD students, research assistants and research project students.
- Coordinate weekly Psychiatric Epigenetics Group meeting.
- Establish and maintain numerous effective collaborative projects involving researchers from different institutes.
- Sample curation for more than 1500 buccal swab, whole blood and brain DNA and RNA samples.
- Arrange quotes and subsequent ordering of reagents and consumables for the research group.
- Student representative, Social, Genetic and Developmental Psychiatry Centre MSc sub-committee.

RESEARCH TECHNIQUES

Molecular Biology **DNA methylation profiling:** Sodium bisulfite treatment, Sequenom MassArray system and Qiagen Pyrosequencer, X-chromosome inactivation assay, allele-specific methylation profiling, Illumina microarray technology (27K and 450K), targeted bisulfite sequencing

Gene expression profiling: Illumina and Affymetrix microarray technology and real-time PCR

Genotyping: Illumina microarray technology, PCR, Restriction fragment length polymorphism (RFLP) procedures and capillary sequencing methods

Nucleic acid extraction from blood and post-mortem brain tissue, purification and amplification

Statistical Analysis and Bioinformatics **Genome-wide analysis:** Co-author of R Bioconductor package for preprocessing of Illumina 450K DNA methylation data.

Gene ontology and network analysis: Ingenuity Pathway Analysis (IPA), Database for Annotation, Visualization and Integrated Discovery (DAVID), Whole Genome Correlation Network Analysis (WGCNA) R statistical software package.

Candidate gene analysis: R statistical software, SPSS

CNV analysis: QuantiSNP, PennCNV, Galaxy

Additional bioinformatics programs frequently used: UCSC Genome Browser, Ensembl, GeneMapper, GeneMarker, primer design software (PRIMER 3.0, PrimoPro, MethPrimer, EpiDesigner)

RESEARCH FUNDING

Dynamic Epigenetic Changes in the Development of Autism

Role: PI

Agency: MRC

Amount: £15,000

Aims: Longitudinal epigenetic profiling from birth in samples obtained from the British Autism Study of Infant Siblings (BASIS) cohort

Dates: 30th September 2012 - 31st April 2013

King's PhD/Postdoctoral Partnership Visit Grant

Role: PI

Amount: £1,140

Dates: 27th July 2009 to 18th September 2009

MRC MSc and PhD Studentship

Amount: £81,735

Dates: 25th September 2007 to 24th August 2011

Pending:

Neuropsychological and genomic signatures of violence exposure in childhood

Role: Co-Investigator (PIs: Professors Avshalom Caspi and Terrie Moffitt; King's College London, Duke University)

Agency: NIH

Amount: \$3,640,683

Aims: Test the hypothesis that violence exposure is associated with altered epigenetic processes as assessed by DNA methylation profiles

Dates: 2016 - 2018

ACADEMIC PUBLICATIONS AND PRESENTATIONS

BIBLOMETRICS

Times cited = 76, Average citations per item = 10.86,

H-index = 5, ISI Web of Science (8 items, 01/2013)

[citation metrics available at Researcher ID (B-3679-2012)]

PUBLICATIONS

In submission:

Wong, C.C.Y., Meaburn, E.L., Ronald, A., Price, T.S., Schalkwyk, L.C., Plomin, R., Mill, J. (in submission) Differential allele-specific DNA methylation within MZ twins discordant for ASD.

Submitted manuscripts:

Wong C.C.Y.*, Pidsley R.*, Volta M., Lunnon K., Mill J. and Schalkwyk L.C. (in revision) A data-driven approach to preprocessing Illumina 450K methylation array data. *Genome Biology*.

Published:

Wong, C.C.Y., Meaburn, E.L., Ronald, A., Price, T.S., Schalkwyk, L.C., Plomin, R., Mill, J. (in press) Genome-wide DNA methylation profiling of monozygotic twins discordant and Concordant for ASD and related traits. *Molecular Psychiatry*.

Melas P.A, Wei Y., **Wong C.C.Y.**, Sjöholm L.K., Åberg E., Mill J., Schalling M., Forsell Y., Lavebratt C. (2013) Monoamine oxidase A (*MAOA*) gene-environment and epigenetic associations with depression in females, and association of early parental death with hypermethylation of the glucocorticoid receptor. *Int J. Neuropsychopharmacology*, 1:16, doi:10.1017/S1461145713000102.

Wong C.C.Y., Pidsley R., Schalkwyk L.C. (2012) The watermelon package: Illumina 450 methylation array normalization and metrics. R package version 0.9.9.

Ouellet-Morin, I., **Wong, C.C.Y.**, Danese, A., Pariante, C., Papadopoulos, A., Mill, J., & Arseneault, L. (2012) Increased SERT methylation is associated with bullying victimization

and blunted cortisol response to stress in childhood: a longitudinal study of discordant MZ twins. *Psychological Medicine*, 1:11; doi:10.1017/S0033291712002784

Zavos, H.M.S., **Wong, C.C.Y.**, Barclay, N.L., Keers, R., Mill, J., Rijdsdijk, F.V., Gregory, A.M., Eley, T.C. (2012) Anxiety sensitivity in adolescence and young adulthood: the role of stressful life events, *5HTTLPR* and their interaction. *Depression and Anxiety*. 29, 400-408

Barclay N.L., Eley, T.C., Mill, J., **Wong C.C.Y.**, Zavos, H.M.S., Archer, S.N., Gregory, A.M. (2011) Associations between *5HTTLPR*, *PER3* and *CLOCK 3111* and sleep quality and diurnal preference in a sample of young adults. *American Journal of Medical Genetics: Part B: Neuropsychiatric Genetics*. 156, 681–690.

Wong, C.C.Y., Caspi, A., Williams, B., Houts, R., Craig, I.W., Mill, J. (2011). A Longitudinal Twin Study of Skewed X-Chromosome Inactivation. *PLoS One*, 6, e17873

Wong, C.C.Y., Mill, J., Fernandes, C. (2011). Drugs and addiction: An introduction to epigenetics. *Addiction*, 106, 480-489

Wong, C.C.Y., Caspi, A., Williams, B., Craig, I.W., Houts, R., Ambler, A., Moffitt, T.E., Mill, J. (2010). A longitudinal study of epigenetic variation in twins. *Epigenetics*, 5:6; 1-11

De Luca, V., Ducci, F., Tee, S.F., Hartz, S., Keers, R., Medland, S., Melas, P.A., Mühleisen, T.W., Ozomaro, U., Pidsley, R., Scott, A.P., Sha, L., Talati, A., Teltsh, O., Videtič, A., Wang, K., **Wong, C.C.Y.**, Delisi, L.E. (2010). Selected summaries from the XVII World Congress of Psychiatric Genetics, San Diego, California, USA, 4-8 November 2009. *Psychiatric genetics*, 20:5, 229-268

Wong, C.C.Y., Clarke, T.K., Schumann, G. (2010). Genetics of addictions: Strategies for addressing heterogeneity and polygenicity of substance use disorders. In T. W. Robbins, B.J. Everitt & D. J. Nutt (Eds), *The neurobiology of addiction: new vistas*. New York: Oxford University Press.

Wong, C.C.Y., Schumann, G. (2008). Genetics of addictions: strategies for addressing heterogeneity and polygenicity of substance use disorders. *Philosophical Transactions of the Royal Society of London, Series B Biological Science*, 363:3213–3222. doi:10.1098/rstb.2008.0104

PRESENTATIONS

Wong, C.C.Y. (2012). Epigenomic Profiling of Autism Spectrum Disorder. Poster Presentation at the 13th International Congress of Human Genetics / 62nd American Society of Human Genetics. San Francisco, USA. 6th-10th November

Wong, C.C.Y. (2012). Methyloomic Profiling in Autism Spectrum Disorder. Oral presentation (*invited symposia*) at the XXth World Congress of Psychiatric Genetics. Hamburg, Germany. 14th-18th October

Wong, C.C.Y. (2012). Epigenomic Profiling of Autism Spectrum Disorder using Post-Mortem Brain Sample. Poster presentation at the 2nd 450K Workshop 2012. University of College, London, U.K. 20th April

Wong, C.C.Y. and Pidsley R. (joint presentation; 2011). Normalisation Strategies for 450K Human Methylation Arrays. Oral presentation at the 1st 450K Workshop 2011. Bristol University, U.K. 21st October

Wong, C.C.Y. (2011). Genome-wide DNA Methylation Profiling of Monozygotic Twins Discordant for ASD and related traits. Oral presentation at the 12th International Congress of Human Genetics / 61st American Society of Human Genetics 2011. Montreal, Canada. 11th-15th October

Wong, C.C.Y. (2011). Genome-wide DNA Methylation Profiling of Monozygotic Twins Discordant for ASD and related traits. Oral presentation at the SGDP Centre, Institute of Psychiatry. London, UK. 20th April

Wong, C.C.Y. (2010). A Longitudinal Twin Study of Skewed X-Chromosome Inactivation. Oral presentation at the XVIIIth Annual World Congress on Psychiatric Genetics 2010, Early Career Investigator Track. Athens, Greece. 3rd-7th October

Wong, C.C.Y. (2010). A Longitudinal Twin Study of Skewed X-Chromosome Inactivation. Oral presentation at the SGDP Centre Institute of Psychiatry. London, UK. 16th June

Wong, C.C.Y. (2010). A longitudinal study of epigenetic variation in twins. Oral presentation at the 2nd Trend in Psychiatric & Neurobiology 2010 Conference, Colorado, USA. 28th March – 1st April.

Wong, C.C.Y. (2009). A longitudinal study of epigenetic variation in twins. Presentation at the XVIIth Annual World Congress on Psychiatric Genetics, Early Career Investigator Track. San Diego, USA. 4th-8th November.

Wong, C.C.Y. (2009). A longitudinal study of epigenetic variation in twins. Oral presentation at the SGDP Centre, Institute of Psychiatry. London, UK. 27th May.

Wong, C.C.Y. (2008). G x E Interaction of the Circadian Rhythm System and Stress-Response System in Risk Alcohol Drinking Behaviour. Oral presentation at the SGDP Centre, Institute of Psychiatry. London, UK. 14th May.

OTHERS

Occasional reviewer for Molecular Psychiatry

Volunteer writer for Bionews

Qualified First Aider and Phlebotomist

Languages: Fluent in English and Chinese

REFERENCES: Available upon request