

# Dr. Siobhain O'Mahony BSc, MSc, PhD, PGTL

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## Education

**2004 – 2006** Doctor of Philosophy from University College Cork, Ireland.

**Thesis:** *Early Life Stress and the Brain-Gut axis.*

An animal model was employed to assess the involvement of a neonatal stress in the development of a disorder of the brain-gut axis, IBS.

**2001 – 2003** Master of Science (Neuropharmacology) from National University of Ireland, Galway, Ireland.

**Thesis:** *Immunosuppression Induced by Pharmacological Agents that Increase Synaptic Serotonin.*

**1997 – 2001** Bachelor of Science (Neuroscience) from University College Cork, Ireland.

## Employment

**2008 – Present** Lecturer and Principal Investigator, Department of Anatomy and Neuroscience, University College Cork. (**Permanent Academic Position**)

- **Lecturing** in the School of Medicine, Coordinator of third year Neuroscience and several modules
- **Mentoring/Supervising**; currently supervising 2 PhD students – graduated 2 PhD students and 1 MD submitted; Supervision of undergraduate UCC students and UKEKA students
- **Disseminating** research findings at national and international meetings
- **Publishing**; published 36 papers, book chapters, reviews
- **Collaborating** with national and international academic groups
- **Directing collaboration** with Mead Johnson and supervising 1 senior postdoctoral researcher. Involved in funding leverage of €160,000

**2007 – 2008** Postdoctoral Researcher, GlaxoSmithKline, Currabinny, Carrigaline, Co. Cork

- **Directed collaboration** with GSK, Harlow, UK in the area of visceral pain
- **Designed, Planned and Managed** lead compound research projects with GSK
- **Developed** new animal models of visceral pain and managed projects around drug discovery using these models
- **Mentored/Supervised**; UKEKA students
- **Disseminated** research findings at national and international meetings

- 2006 – 2007** Post-doctoral Researcher, Department of Psychiatry, University College Cork
- 2003 - 2004** Marie Curie Research Fellow in the Department of Psychiatry and Neuropsychology, University of Maastricht, the Netherlands

## Teaching Experience

- Topographical anatomy and Neuroanatomy to: Graduate Medical student (years 1 + 2), Nursing students (years 2), Speech and Language Therapy students (year 1), Occupational therapy students (year 1), Dental students, Dental hygienists
- Endocrine pharmacology to: Pharmacology students (year 1)
- Behavioural and Cognitive Neuroscience to: Neuroscience student (year 4)
- Topographical anatomy refresher course for physiotherapists
- Third year Neuroscience Degree coordinator
- Module coordinator of 6 undergraduate modules

## Supervisory Experience

- 15 honours students final year laboratory projects
- Two Final Medicine students
- 20 honours students literature reviews
- Co-supervision of a 4 PhD students (2 graduated)
- Co-supervision of 1 MD students (1 submitted)

## Committees

- Member of the Graduate Entry to Medicine Oversight committee
- Member of the Graduate Entry Board of studies
- Member of the Neuroscience Cork
- Member of the Anatomical Society
- School of Medicine Mentoring Programme - currently a Mentor to 1<sup>st</sup> year undergraduate medical students
- Member of the editorial board for the World Journal of Gastroenterology
- Member of Irish Pain Research Network
- Member of the Irish Pain Society

## Education and Outreach

- Active participant of education and outreach particularly during science week with regard to school visits.

## Funding

- IRCSET 2010 (PhD student)- €72, 000
- Involved in funding leverage of €160,000 from Mead Johnson (1 senior postdoctoral researcher + consumables) with potential to extend.

## Publication List

### Research articles

**O'Mahony S**, Sbayeh A, Horgan M, O'Flynn S, O'Tuathaigh CMP. Association between learning style preferences and anatomy assessment outcomes in graduate-entry and undergraduate medical students. *Anatomical Sciences Education*, 2016, In Press.

**O' Mahony SM**, Stilling RM, Dinan TG, Cryan JF. The microbiome and childhood diseases: Focus on brain-gut axis. Birth Defects Res C Embryo Today. 2015 Dec 25.

Balta JY, Cronin M, Cryan JF, **O'Mahony SM**. Human preservation techniques in anatomy: A 21st century medical education perspective. *Clin Anat*. 2015 Jun 28.

Moloney RD, **O'Mahony SM**, Dinan TG, Cryan JF. Stress-induced visceral pain: toward animal models of irritable-bowel syndrome and associated comorbidities. *Front Psychiatry*. 2015 Feb 16;6:15.

Hyland NP, **O'Mahony SM**, O'Malley D, O'Mahony CM, Dinan TG, Cryan JF. Early-life stress selectively affects gastrointestinal but not behavioral responses in a genetic model of brain-gut axis dysfunction. *Neurogastroenterol Motil*. 2015 Jan;27(1):105-13.

**O'Mahony SM**, Felice VD, Nally K, Savignac HM, Claesson MJ, Scully P, Woznicki J, Hyland NP, Shanahan F, Quigley EM, Marchesi JR, O'Toole PW, Dinan TG, Cryan JF. Disturbance of the gut microbiota in early-life selectively affects visceral pain in adulthood without impacting cognitive or anxiety-related behaviors in male rats. *Neuroscience*. 2014 Sep 26;277:885-901

**O'Mahony SM**, Clarke G, Borre YE, Dinan TG, Cryan JF. Serotonin, tryptophan metabolism and the brain-gut-microbiome axis. *Behav Brain Res*. 2015 Jan 15;277:32-48.

Clarke G, **O'Mahony SM**, Dinan TG, Cryan JF. Priming for health: gut microbiota acquired in early life regulates physiology, brain and behaviour. *Acta Paediatr*. 2014 Aug;103(8):812-9.

Felice, VD, Gibney, SM, Gosselin, RD, Dinan, TG, **O'Mahony, SM** and Cryan, JF. Differential Activation of the Prefrontal Cortex and Amygdala Following Psychological Stress and Colorectal Distension in the Maternally Separated Rat. *Neuroscience* 2014.

Buckley, MM, **O' Mahony, SM**, O' Malley, D. Convergence of Neuro-Endocrine-Immune Pathways in the Pathophysiology of Irritable Bowel Syndrome. *World Journal of Gastroenterology* 2014.

Carroll SY, **O'Mahony SM**, Grenham S, Cryan JF, Hyland NP. Disodium cromoglycate reverses colonic visceral hypersensitivity and influences colonic ion transport in a stress-sensitive rat strain. *PLoS One*. 2013 Dec 18;8(12):e84718

Dervla O'Malley, Marcela Pieper, **Siobhain O'Mahony**, Timothy G Dinan, and John F Cryan. Differential visceral pain sensitivity and colonic morphology in four common laboratory rat strains. *Experimental Physiology* 2013. Dec 20. [Epub ahead of print]

Davey KJ, Cotter PD, O'Sullivan O, Crispie F, Dinan TG, Cryan JF, **O'Mahony SM**. Antipsychotics and the gut microbiome: olanzapine-induced metabolic dysfunction is attenuated by antibiotic administration in the rat. *Transl Psychiatry*. 2013 Oct 1;3: e309; doi:10.1038/tp.2013.83

**O' Mahony SM**, Clarke G, McKernan DP, Bravo JA, Dinan TG, Cryan JF. Differential visceral nociceptive, behavioural and neurochemical responses to an immune challenge in the stress-sensitive Wistar Kyoto rat strain. *Behav Brain Res*. 2013 Sep 15;253:310-7.

**O'Mahony SM**, Tramullas M, Fitzgerald P, Cryan JF. Rodent models of colorectal distension. *Curr Protoc Neurosci*. 2012 Oct;Chapter 9:Unit 9.40. PMID: 23093353

Davey KJ, **O'Mahony SM**, Schellekens H, O'Sullivan O, Bienenstock J, Cotter PD, Dinan TG, Cryan JF. Gender-dependent consequences of chronic olanzapine in the rat: effects on body weight, inflammatory, metabolic and microbiota parameters. *Psychopharmacology (Berl)*. 2012 May;221(1):155-69. PMID: 22234378

Cryan JF, O'Mahony SM. The microbiome-gut-brain axis: from bowel to behavior. *Neurogastroenterol Motil*. 2011 Mar;23(3):187-92. PMID: 21303428

**O'Mahony SM**, Hyland NP, Dinan TG & Cryan JF. Maternal separation as a model of brain-gut axis dysfunction. Invited review. *Psychopharmacology (Berl)*. 2011 Mar;214(1):71-88. PMID: 20886335

**O' Mahony SM**, Coelho A-M, Fitzgerald P, Lee K, Winchester W, Dinan TG, Cryan JF. The effects of gabapentin in two animal models of co-morbid anxiety and visceral hypersensitivity. *Eur J Pharmacol*. 2011 Sep 30;667(1-3):169-74. PMID: 21645509

McKernan DP, Nolan A, Brint EK, **O'Mahony SM**, Hyland NP, Cryan JF, Dinan TG Toll-like receptor mRNA expression is selectively increased in the colonic mucosa of two animal models relevant to irritable bowel syndrome. *PLoS One*; 4(12):e8226. PMID: 20011045

**O' Mahony SM**, Bulmer DC, Coelho AM, Fitzgerald P, Bongiovanni C, Lee K, Winchester W, Dinan TG, Cryan JF. 5-HT<sub>2B</sub> receptors modulate visceral hypersensitivity in a stress-sensitive model of brain-gut axis dysfunction. *Neurogastroenterology Motil*. 2010 May;22(5):573-8, e124. PMID: 20003079

**O'Mahony SM**, Marchesi JR, Scully P, Codling C, Coelho AM, Quigley EM, Cryan JF, Dinan TG. Early life stress alters behavior, immunity, and microbiota in rats: implications for irritable bowel syndrome and psychiatric illnesses. *Biol Psychiatry*. 2009 Feb 1;65 (3):263-7. PMID: 18723164

Clarke G, **O'Mahony SM**, Cryan JF, Dinan TG Verapamil in treatment resistant depression: a role for the P-glycoprotein transporter? *Hum Psychopharmacol*. 2009 Apr;24(3):217-23. PMID: 19212940

Clarke G, **O'Mahony SM**, Hennessy AA, Ross P, Stanton C, Cryan JF, Dinan TG. Chain reactions: Early-life stress alters the metabolic profile of plasma polyunsaturated fatty acids in adulthood. *Behav Brain Res*. 2009 Jul 16. PMID: 19616034

Hyland NP, Julio-Pieper M, **O'Mahony SM**, Bulmer DC, Lee K, Quigley EM, Dinan TG, Cryan JF. A distinct subset of submucosal mast cells undergoes hyperplasia following neonatal maternal separation: a role in visceral hypersensitivity? *Gut*. 2009 Jul;58(7):1029-30. PMID: 19520896

**O'Mahony S**, Chua AS, Quigley EM, Clarke G, Shanahan F, Keeling PW, Dinan TG. Evidence of an enhanced central 5HT response in irritable bowel syndrome and in the rat maternal separation model. *Neurogastroenterol Motil.* 2008 Jun;20(6):680-8. PMID:18194152

Myint AM, **O'Mahony S**, Kubera M, Kim YK, Kenny C, Kaim-Basta A, Steinbusch HW, Leonard BE. Role of paroxetine in interferon-alpha-induced immune and behavioural changes in male Wistar rats. *J Psychopharmacol.* 2007 Nov;21(8):843-50. PMID:17984161

Clarke G, **O'Mahony S**, Malone G, Dinan TG. An isocratic high performance liquid chromatography method for the determination of GABA and glutamate in discrete regions of the rodent brain. *J Neurosci Methods.* 2007 Mar 15;160(2):223-30. Epub 2006 Oct 24. Erratum in: *J Neurosci Methods.* 2007 Sep 30;165(2):320. PMID: 17064781

**O'Mahony SM**, Myint AM, van den Hove D, Desbonnet L, Steinbusch H, Leonard BE. Gestational stress leads to depressive-like behavioural and immunological changes in the rat. *Neuroimmunomodulation.* 2006;13(2):82-8. PMID: 17033197

**O'Mahony S**, Dinan TG, Keeling PW, Chua AS. Central serotonergic and noradrenergic receptors in functional dyspepsia. *World J Gastroenterol.* 2006 May 7;12(17):2681-7. PMID: 16718753

Dinan TG, Quigley EM, Ahmed SM, Scully P, O'Brien S, O'Mahony L, **O'Mahony S**, Shanahan F, Keeling PW. Hypothalamic-pituitary-gut axis dysregulation in irritable bowel syndrome: plasma cytokines as a potential biomarker? *Gastroenterology.* 2006 Feb;130(2):304-11. PMID: 16472586

**O'Mahony SM**, Myint AM, Steinbusch H, Leonard BE. Efavirenz induces depressive-like behaviour, increased stress response and changes in the immune response in rats. *Neuroimmunomodulation.* 2005;12(5):293-8. PMID: 16166808

## Book Chapters

Felice VD, Moloney RD, Cryan JF, Dinan TG, O' Mahony SM, 2015. Visceral Pain and Psychiatric Disorders in Modern Trends in Psychopharmacology. Edited by David Finn and Brian Leonard.

Verdu EF, Hayes C, O' Mahony SM, 2015. Importance of the Microbiota in Early Life and Influence on Future Health. The gut-brain axis: Dietary, probiotic and prebiotic interventions on the microbiota. Edited by Niall Hyland and Catherine Stanton

## Other Information

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12 invited oral presentations at national and international conferences and symposiums

Ray Clouse award for most cited article 2009

Poster of distinction Digestive Disease Week 2008

Oral presentation award Neuroscience Ireland 2008

Young Investigator award Neurogastroenterology and Motility 2008

Supervised 4 PhD students (2 graduated) and 1 MD student (submitted), 1 senior postdoctoral researcher

Internal and external examiner-2 internal and 1 external

Journal reviewer for over 15 journals

Grant reviewer for Foundation Recherche Medicale and Biotechnology and Biological Science Research Council

