

# Matthew Snelson

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## » Education

2015 – 2019      **Doctor of Philosophy (PhD)**, Monash University, Australia

**Thesis Title:** The effects of dietary advanced glycation endproducts on gut homeostasis and chronic kidney disease

**Brief Synopsis:** Excessive intakes of advanced glycation endproducts (AGE) contribute to the progression of chronic kidney disease, however the mechanism is poorly understood. This project is investigating whether these effects are modulated via changes in the gut microbiota, and whether nutrients that target the microbiota can ameliorate AGE-induced kidney disease.

2014              **Postgraduate Diploma in Biotechnology**, Swinburne University, Australia

2012              **Bachelor of Health Sciences (Honours)**, Curtin University, Australia

**Thesis Title:** High protein diet enriched in casein induces blood-brain barrier dysfunction and neuroinflammation in wild-type mice

2009              **Postgraduate Diploma in Dietetics**, Curtin University, Australia

2006 – 2008      **Bachelor of Science (Nutrition)**, Curtin University, Australia

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## » Employment

2019 – current    **Research Fellow**, Monash University, Australia

2017 – 2018      **Human Pathology Demonstrator**, Monash University, Australia

Lab based demonstrating to 3<sup>rd</sup> year pathophysiology students

2012 – 2013      **Research Assistant**, Curtin University, Australia

Lab based position primarily involving immunosorbent assays and 3D immunofluorescopy

2010 – 2012      **Clinical Dietitian**, Royal Perth Hospital, Australia

Clinical role at major tertiary hospital with rehabilitation, oncology and immunology patients

2010 - 2011      **Research Dietitian**, Curtin University, Australia

Qualitative survey data collection and analysis

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## » Awards and Scholarships

2019              **Winner, Best Biomedical Research Talk Award**, Alfred Health Alliance EMCR Symposium

2019              **Winner, Central Clinical School Travel Grant**, Monash University

2019              **Finalist, Australian Diabetes Society-Pincus Taft Young Investigator Award**, Australasian Diabetes Congress, Australia

2019              **Winner, Baker Heart and Diabetes Institute Prize for Diabetes Research**, Alfred Health Week, Australia

2018              **Postgraduate Publication Award**, Monash University

2018              **2nd Best Oral Presentation**, Nutrition Society of Australia, Canberra

- 2018 **Australian New Zealand Society of Nephrology International Travel Award**
- 2018 **Victorian Finalist, FameLab Competition**, Melbourne Museum, Australia
- 2017 **2nd Place Poster Presentation, Graduate Research Symposium**, Central Clinical School, Monash University, Australia
- 2017 **Winner, Baker Heart and Diabetes Institute Prize for Diabetes Research**, Alfred Health Week, Australia
- 2017 **European Association for the Study of Diabetes Travel Award**
- 2017 **Australian New Zealand Society of Nephrology International Travel Award**
- 2017 **Winner, 3 Minute Thesis Competition**, Central Clinical School, Monash University, Australia
- 2016 **New Conference Presenter Award**, Dietitian's Association of Australia National Conference, Australia
- 2016 **Early Career Research Showcase**, Dietitian's Association of Australia National Conference, Australia
- 2015 **Bright Sparks Travel Award**, Baker Heart and Diabetes Institute, Australia
- 2015 **Highly Commended Oral Presentation Award**, Biomed Link, Australia
- 2015 **Australian Postgraduate Award**, Monash University, Australia
- 2014 **Top Graduate Prize**, Swinburne University, Australia
- 2006 **Academic Merit Scholarship**, Curtin University, Australia

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## » Conference Oral Presentations

- 2020 **Virtual Microbiome Summit**, Online  
**Title:** Thermally processed diet-induced albuminuria, Enterobacteriaceae expansion and cecal metabolome alterations are attenuated by resistant starch in diabetes
- 2019 **Australasian Diabetes Congress**, Sydney, Australia  
**Title:** Advanced Glycation Endproduct-Induced Albuminuria and Changes in Gut Microbiota and Metabolome are Attenuated by Resistant Starch in a Mouse Model of Type 2 Diabetes
- 2018 **Nutrition Society of Australia 42nd Annual Scientific Meeting**, Canberra, Australia  
**Title:** Metabolic effects of resistant starch type 2: A systematic literature review and meta-analysis of randomised controlled trials
- 2018 **Australian and New Zealand Society of Nephrology 54th Annual Scientific Meeting**, Sydney, Australia  
**Title:** Resistant starch is protective against diabetic nephropathy by inhibition of complement activation in a mouse model of diabetes
- 2017 **Biomed Link 2017**, Melbourne, Australia  
**Title:** Resistant starch ameliorates advanced glycation endproduct-induced albuminuria in a mouse model of type 2 diabetes
- 2016 **Nutrition Society of Australia Annual Scientific Meeting**, Melbourne, Australia

**Title:** Resistant starch ameliorates heat treated diet-induced gut permeability and renal dysfunction in experimental diabetes

2016 **Asian Pacific Congress of Nephrology**, Perth, Australia

**Title:** Resistant starch ameliorates advanced glycation endproduct-induced albuminuria in a mouse model of type 2 diabetes

2016 **Dietitian's Association of Australia National Conference**, Melbourne, Australia

**Title:** Excess Consumption Of Dietary Advanced Glycation End Products Induce Changes in Gut Microbiota which is Associated with Inflammation

2015 **International Symposium on the Maillard Reaction**, Tokyo, Japan

**Title:** Excess Consumption Of Dietary Advanced Glycation End Products Induce Changes in Gut Microbiota which is Associated with Inflammation

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## » **Invited Oral Presentations**

2019 **Australasian Diabetes Congress**, Sydney, Australia

**Title:** Diabetes and the gut microbiota: sorting through the crap

2018 **Canberra Health Annual Research Meeting**, Canberra, Australia

**Title:** Advanced glycation endproducts and the gut microbiota

2018 **Monash University Gastroenterology Research Seminar**, Melbourne, Australia

**Title:** Resistant starch ameliorates advanced glycation endproduct-induced albuminuria in a mouse model of type 2 diabetes

2017 **Melbourne Microbiome Interest Group**, Melbourne, Australia

**Title:** The role of processed foods on diabetes-induced chronic kidney disease

2016 **Dietitian's Association of Australia Gut Microbiota Seminar**, Melbourne, Australia

**Title:** Dietary Factors and the Gut Microbiota

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## » **Conference Poster Presentations**

2019 **World Congress of Nephrology**, Melbourne, Australia

**Title:** Resistant starch ameliorates advanced glycation endproduct-induced gut dysbiosis and albuminuria in a mouse model of type 2 diabetes

2018 **International Society of Prebiotics and Probiotics**, Singapore

**Title:** Metabolic effects of resistant starch type 2: a systematic literature review and meta-analysis of randomised controlled trials.

2017 **53<sup>rd</sup> Annual Meeting of the European Association for the Study of Diabetes**, Lisbon, Portugal

**Title:** Resistant starch ameliorates advanced glycation endproduct-induced albuminuria in a mouse model of type 2 diabetes

2017 **Alfred Health Week**, Melbourne, Australia

**Title:** Resistant starch ameliorates advanced glycation endproduct-induced albuminuria in a mouse model of type 2 diabetes

2017 **Monash University Early Career Researcher Symposium**, Melbourne, Australia

**Title:** Resistant starch ameliorates advanced glycation endproduct-induced albuminuria in a mouse model of type 2 diabetes

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## » Peer-reviewed Publications

Kaye D, Shihata W, Jama H, Tsyganov K, Ziemann M, Kiriazis H, Horlock D, Vijay A, Giam B, Vinh A, Johnson C, Fiedler A, Donner D, **Snelson M**, Coughlan M, Phillips S, Du X, El-Osta A, Drummond G, Lambert G, Spector T, Valdes A, Mackay C, Marques F: Deficiency of Prebiotic Fibre and Insufficient Signalling Through Gut Metabolite Sensing Receptors Leads to Cardiovascular Disease *Circulation* 2020, **141(17)**: 1393-1403.

**Snelson M**, Sih Min Tan S, Higgins G, Lindblom R, Coughlan M: Exploring the role of the metabolite-sensing receptor GPR109a in diabetic nephropathy *Am J Physiol Renal Physiol* 2020, **318(3)**: F835-F842.

**Snelson M**, Biruete A, McFarlane C, Campbell K: A Renal Clinician's Guide to the Gut Microbiota *Journal of Renal Nutrition* 2020 (In Press)

Lindblom R, Gavin C, Higgins, Nguyen TV, Arnstein M, Henstridge D, Granata C, **Snelson M**, Thallas-Bonke V, Cooper M, Forbes J, Coughlan M: Delineating a role for the mitochondrial permeability transition pore in diabetic kidney disease by targeting cyclophilin D *Clinical Science* 2020, **134(2)**: 239–259.

Tan S, Ziemann M, Thallas-Bonke V, **Snelson M**, Kumar V, Laskowski A, Nguyen TV, Huynh K, Clarke M, Libianto R, Baker S, Skene A, Power D, MacIsaac R, Henstridge D, Wetsel R, El-Osta A, Meikle P, Wilson S, Forbes J, Cooper M, Ekinci E, Woodruff T, Coughlan M: Complement C5a induces renal injury in diabetic kidney disease by disrupting mitochondrial metabolic agility *Diabetes* 2020, **69(1)**: 83-98.

**Snelson M**, Coughlan M: The Devil's in the Detail: The Importance of Specific, Descriptive Language for Reproducibility in Nutrition Science *Journal of Renal Nutrition* 2020, **30(4)**: 274-275.

**Snelson M**, Jong J, Manolas D, Koh S, Louise A, Stern R, Kellow N: Metabolic effects of resistant starch type 2: a systematic literature review and meta-analysis of randomised controlled trials *Nutrients* 2019, **11(8)**: 1833.

**Snelson M**, Coughlan, M: Dietary Advanced Glycation End Products: Digestion, Metabolism and Modulation of Gut Microbial Ecology *Nutrients* 2019, **11(2)**: 215.

**Snelson M**, Kellow N, Coughlan M: Modulation of the gut microbiota by resistant starch as a treatment for chronic kidney diseases: evidence of efficacy and mechanistic insights *Advances in Nutrition* 2019, **10(2)**:303-320 (Selected for Cover Art)

**Snelson M**, Clarke R, Coughlan M: Stirring the Pot: Can Dietary Modification Alleviate the Burden of CKD? *Nutrients* 2017, **9**:265 (Selected for Cover Art)

**Snelson M**, Mamo JCL, Lam V, Giles C, Takechi R: Differential effects of high protein diets derived from soy and casein on blood-brain barrier integrity in wild-type mice *Frontiers in Nutrition* 2017, **4**:35

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## » Professional Membership

<i>2009 – current</i>	<b>Dietitian’s Association of Australia</b>
<i>2015 – current</i>	<b>Nutrition Society of Australia</b>
<i>2015 – current</i>	<b>International Maillard Reaction Society</b>
<i>2015 – current</i>	<b>Australian New Zealand Society of Nephrology</b>
<i>2015 – current</i>	<b>Australian Diabetes Society</b>
<i>2017 – current</i>	<b>American Society of Nephrology</b>
<i>2017 – current</i>	<b>European Association for the Study of Diabetes</b>
<i>2018 – current</i>	<b>Australian Bioinformatics and Computational Biology Society</b>

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## » Skills

### Laboratory Techniques:

Flow Cytometry, ELISA, RT-PCR, Mitochondrial Isolation and Assays, Immunohistochemistry, In Vivo Animal Experiments (Gavage, Intraperitoneal Injection), Management of Animal Colonies and Breeding

### Computer Skills:

R, Graphpad Prism, Microsoft Excel, Flow Jo, Adobe Photoshop, QIIME, Linux.

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## » Community Engagement

*2016*                    **Presenter**, Mount Waverley Rotary Club, Melbourne, Australia

Presented to local community group on research

*2016*                    **Interview**, Sydney Morning Herald, Sydney, Australia

**Title:** AGEs foods research suggests what is the best diet for a healthy gut

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## » Science Communication Experience

*2016 – current*      **Presenter**, Laborastory, Melbourne, Australia

Presenter at popular science storytelling event in Melbourne.

*2015*                    **Writer**, The Conversation

**Title:** Explainer: what are E numbers and should you avoid them in your diet?

*2014 – current*      **Science Presenter**, Laneway Learning, Melbourne, Australia

Teaching entertaining and engaging classes about genetics for members of the public.

*2014 – 2015*        **Guest Presenter**, Melbourne Knowledge Week, Melbourne, Australia

Teaching entertaining and engaging classes about genetics for members of the public.

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## » Extra-Curricular Activities

*2020*                    **Organising Committee Member**, DAA National Conference 2021

*2017 – 2019*        **President**, Monash Diabetes Student Association

*2017*                    **Organising Committee Member**, CCS Graduate Research Symposium

*2016*                    **Committee Member**, DAA VIC branch EDC Committee

*2015-2016*        **Committee Member**, Baker IDI Student Committee, Baker IDI, VIC