**2018 ASM Abstract Submission form**

All Raine Study researchers are invited to submit an abstract to present their research findings at the Raine Study Annual Scientific Meeting [8 minute oral presentation followed by 2 mins of questions from the floor]. Early career researchers and PhD students are encouraged to present on behalf of their Special Interest Groups. The Raine Medical Research Foundation have kindly donated **two prizes of $750 each** **for the best presentations** by students and early career researchers. Please complete this form and return to the Scientific Management (raineadmin-SPH@uwa.edu.au) **by Friday 19th October 2018**.

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| Researcher Bio (2-3 sentences – will be included on the final program) |
| Gareth is an orthoptist at the Lions Eye Institute in Perth, Western Australia. He is currently completing his PhD through the University of Western Australia under the supervision of Professor David Mackey, Dr Seyhan Yazar, and Prof Robyn Lucas. His current research focusses on environmental determinants of myopia risk in epidemiological studies, particularly time spent outdoors and sun exposure. |
| **Title:** *Title of presentation* |
| Exploring risk factors for short-sightedness in Western Australian adults |
| **Speaker:** *Title, name, position, institution, address, telephone, email* |
| Mr Gareth Lingham, PhD Candidate, Centre for Ophthalmology and Visual Science and the Lions Eye Institute, The University of Western Australia, 2 Verdun St Nedlands WA 6009, 0488 937 548, garethlingham@lei.org.au |
| **Special Interest Group:** |
| **Senses SIG** |
| **Co-investigators:** |
| Dr Louis Stevenson, Ms Diane Wood, Dr Seyhan Yazar, Prof David A Mackey |
| **Abstract:** *Approximately 600 words* |
| Background: Myopia (near-sightedness) is a common condition of the eye in which near objects are seen clearly, but objects farther away are blurry. Myopia is becoming increasingly common throughout the world. Indeed, the myopia epidemic has become a major public health issue as myopia is associated with potentially blinding eye diseases and significant economic costs. Spending time outdoors reduces myopia incidence and progression in school children. However, more time spent outdoors is associated with more sun exposure, which can have adverse effects such as an increased risk of skin cancers. We identified the major risk factors for myopia amongst Western Australian adults.  Methods: Participants of The Raine Study Generation 1 were eligible for this study. All participants completed questionnaires on demographics, ocular history and time spent on near tasks and outdoors, and underwent non-cycloplegic autorefraction, ocular biometry, and conjunctival ultraviolet autofluorescence (CUVAF) and colour eye photography. CUVAF area was measured by a single grader using semi-automated software. We excluded individuals with an ocular history of laser refractive surgery, cataract diagnosis, scleral buckles surgery, pterygium presence or missing refraction data. Logistic regression was used to identify risk factors for myopia after adjustment for confounding factors. Secondary analyses were conducted using ocular axial length as a marker of myopia to allow inclusion of individuals who had previously had laser refractive surgery (n=25), a cataract diagnosis or undergone cataract extraction (n=73), or a diagnosis of pterygium or prior pterygium excision (n=75). Axial length and spherical equivalent of right and left eyes were averaged together. Myopia was defined as an average spherical equivalent <-0.50D and a p value < 0.05 was considered statistically significant.  Results: Eye data were available for a total of 1,031 individuals. The mean age was 56.7 years (range 40.9 to 81.7) and 570 (57.5%) were female. Data for 812 individuals were included in the analysis of myopia risk factors. Only increasing hours spent on near work per week (10 hour increments) and decreasing quartile of CUVAF area were significant risk factors for myopia (OR=1.13, 95% CI: 1.02, 1.24; OR[highest quartile vs lowest quartile] = 0.65, 95%CI 0.41, 1.03, respectively). When examining the association between axial length and the independent variables, data were available for 982 participants. Male sex, increasing time spent on near work per week (10-hour increments) and higher level of education were all associated with longer axial length, a marker of myopia. Current time spent outdoors during an average week was not associated with myopia or axial length.  Conclusions: Current time spent outdoors was not associated with myopia risk in The Raine Study Generation 1. Quartiles of CUVAF area, a longer term biomarker of ocular sun exposure, was associated with myopia but not with axial length. These results suggest that recent sun exposure does not affect myopia risk in adults and that sun exposure at younger ages may prevent myopia. |

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| X | By placing an ‘X’ in this box the lead investigator certifies that all investigators listed above have read and agree to the contents of this form. |

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| **Corresponding author:** | **Date:** |
| Gareth Lingham | 18/10/2018 |