Information for 2017
Raine Study Grant Application Submissions
(for studies to start in 2018/2019)

Grant applications based on the use of previously collected Raine Study data are encouraged. Such studies have fewer implications on the cohort, staff and logistics, therefore there are less restrictions on these applications.

Grant applications based on collection of new data on the cohort participants need to consider the total cost of the cohort recall and data collection and the impact on the cohort.

The current follow-up (Gen2_27), partly funded by a NHMRC grant on ectopic fat, is scheduled for completion at the end of 2018. A further follow-up (Gen2_29), partly funded by two NHMRC grants on myopia and cardiovascular disease, will likely start late in 2017 and be completed by the end of 2019.

Grants being submitted for the coming round will be for the next follow-up of the Raine Study cohort which will be planned to start in late 2018/early 2019 (Gen2_30). If suitable funding is acquired, it is anticipated this will have a mental health focus. As it typically takes 4 to 5 months to set up a cohort follow-up, it is envisaged that preparation for data collection for the Gen2_30 follow-up would be performed during the latter part of 2018, and data collection start in January 2019. Whether or not the next follow-up starts at this time or needs to be delayed a little depends on successful funding outcomes and progress of other cohort follow-ups (including those of other Raine Study generations). Grant applicants are encouraged to discuss these issues with the Scientific Directors if further clarity is required.

Funding a cohort follow-up typically requires a minimum of $500K pa for 3 years. In most grant applications this may be difficult to cover. Thus, in the past the Raine Study required 2 or more project applications to be successful for the pooled resources to cover the core cohort assessments costs. Issues arise when only one project grant is successful in a funding round resulting in insufficient funds to cover the core data collection costs and additional funding needs to be sought.

Grant applicants are requested to include minimum FTE requirements to cover a proportion of core cohort data collection (anthropometry, blood pressure, core SES data) in addition to the FTE requirements to cover project specific data collection.

The Committee advises not to include the above details in the grant applications

The following information is provided to ensure grant applicants submit consistent information. Any investigator queries should be discussed with the Raine Study Management.

All final grant applications including budget details need to be reviewed by the Raine Study Management prior to submission to grant authorities.

FOR ALL GRANTS

RAINE STUDY CORE MANAGEMENT AND CORE DATA ACCESS FEE

BACKGROUND INFORMATION

A cohort core management and core data access fee must be included in all grants submitted by researchers wishing to utilise the Raine Study resource. The fee is set at 15% of the total grant budget (capped at $65,000). Research grants of less than $20,000 are exempt from this fee. Where utilisation of the Raine Study data forms part of a multi-centre grant application, the access fee will be reduced. Please consult the Raine Study Directors in this regard.

The core cohort management fee contributes to costs associated with:

- Access to Raine Study previously collected data and biological samples.
- Raine Study governance and management activities including co-ordination of ethics applications, project and manuscript review and approvals and adherence to study protocols.
- Budgeting and cost management, quality control and risk management.
- Integration of all researchers involved in the cohort follow-up.
- Questionnaire and database development.
- Study participant retention, including website, newsletters, and cards.
- Consumer consultation and participation.
- Curation of previously collected longitudinal Raine Study data, including genetic information.
- Curation of previously collected biological samples.
- Communication, website and newsletters.

SUGGESTED WORDING FOR GRANT APPLICATIONS – DATA ACCESS FEE

Core cohort management costs relate to the governance and maintenance of the cohort, curation of the existing data and biological samples, and overall study coordination and management of new data collection. This fee also covers the cost to access previously collected data. The Raine Study core management currently costs around $600,000 p.a., which is funded by pooling the cohort access fee included in all grants together with financial contributions from partner Universities and research institutions. This fee has been set by the Raine Study Executive Committee at $65,000 or 15% of the grant (whichever is least). Any investigators proposing to access the Raine Study are required to contribute this access fee and include it in their grant application. For this grant application, the allocation to core cohort costs is $ (insert relevant value for your grant here) over the grant period.

FOR GRANTS COLLECTING NEW DATA AT COHORT FOLLOW-UP

TESTING LOCATION - BACKGROUND INFORMATION

- Where possible the Raine Study tries to perform all testing on each participant on one occasion at a single location. Currently, and subject to grant success and further discussion, this location will be the Raine House at 14-16 Parkway, UWA. Core data collection costs (see below) have been estimated based on testing at a single location.
- Testing at another location/occasion (e.g. for specialised testing) may be unavoidable. Such testing needs to be discussed with Raine Study Management to ensure that participant burden is minimised. Additional core data collection costs [0.25FTE to 0.5FTE Research Assistant] will be incurred if such testing is required in order to cover costs associated with additional recruitment, scheduling and co-ordination.

DATA COLLECTION, COHORT ASSESSMENT - BACKGROUND INFORMATION

- Recruitment, review and data collection from the Raine Study cohort participants is co-ordinated and conducted by the Raine Study Review Team*.
- Appointment of data collection staff is coordinated through the Raine Study Management Team.
- Funding obtained for contacting the cohort, data collection and the conduct of the proposed cohort review will be transferred to the Raine Study Management to enable pooling of resources to contribute to the funding of the Raine Study Review Team.
- The cohort follow-up generally collects data over a 2.0 to 3.0 year period.
- Grant funding for personnel associated with cohort follow-up (i.e. the Raine Study Review Team) needs to cover a three year period. This is to accommodate a three month pre-data collection period (for training, assessment protocols, ethics applications, etc.) and a three month post-data collection period for data entry, cleaning, consolidation, etc.

*The Raine Study Review Team consists the Raine Study Co-ordinator and experienced recruitment and research assistants (RAs). The costs of core data collection in grant applications cover the costs of this Review Team. Additional RAs are recruited where necessary for the period of cohort assessments to collect project-specific data. These additional RAs must be budgeted for in grant applications if a project requires additional specific data collection.

RAINE STUDY CORE DATA COLLECTION COSTS

BACKGROUND INFORMATION

The Raine Study Review Team are responsible for:

- All follow-up management requirements, including budgeting and cost management, quality control and risk management.
- Planning, development, co-ordination, management and organisation of cohort follow-up assessments.
- Establishment of the cohort follow-up steering/advisory group.
- Procurement of follow-up equipment and resources.
- Participant informed consent process.
- Data collection, data entry and data quality control.
- Follow-up co-ordination.
- Participant recruitment including appointment scheduling, tracking, reminders.
- Participant consent.
- Collection of core longitudinal physical assessment including height, weight, blood pressure, biological samples and the collection of core questionnaire data including socio-economic status, general health and development.

A cohort follow-up cannot proceed unless there is a minimum of 4 FTE RA's (this includes the co-ordinator) allocated to perform these tasks.

STAFFING REQUIREMENTS FOR A COHORT FOLLOW-UP – to be included in grant applications.

COLLECTION OF NEW ASSESSMENT DATA

<u>All</u> grants proposing to <u>collect new data</u> at follow-up are required to request funding for:

- **One full-time recruitment officer (1.0 FTE) (PSP1)** for cohort recruitment and scheduling, for a three year period
- **One full time research assistant (1.0 FTE) (PSP2)** for core data collection, for a three year period.

  The need for a 3 year appointment is to accommodate a three month pre-data collection period (for training, assessment protocols, ethics applications, etc.), 2.5 years of data collection, and a three month post-data collection period for data entry, cleaning, consolidation, etc.

  The justification for each grant asking for 1 full time (1.0FTE) recruitment officer and on 1 full-time (1.0FTE) RA is based on an estimated 2 to 3 grant applications being successful.

Funds obtained for the Raine Study Review Team are transferred from each successful grant to the Raine Study Management to enable pooling of resources to contribute to the funding of the Raine Study Review Team.

If data are proposed to be collected at a site separate from the main data collection venue, applicants must request funding for:

- **One additional part-time (0.25 FTE OR 0.5 FTE) RA (PSP2) for 3 years**.

  A separate site involves additional recruitment and booking procedures. Funding for this individual is transferred to Raine Study Management to enable pooling of resources to contribute to the funding of the Raine Study Review Team. If the second appointment is complex and work intensive, then 0.5 FTE recruitment is required.

All grants proposing to only collect questionnaire data at follow-up are only required to request funding for:

- **One half-time (0.5 FTE) RA (PSP2) for both recruitment and core data collection for a three year period.**

  This is to accommodate a three month pre-data collection period (for training, assessment protocols, ethics applications, etc.), 2.5 years of data collection, and a three month post-data collection period for data entry, cleaning, consolidation, etc., etc. Funding for this individual is transferred to Raine Management to enable pooling of resources to contribute to the funding of the Raine Study Review Team.

  If the **questionnaire data involves face to face interviews or any method other than online** self-completion, then a 1 FTE (RA) PSP1 must be included.

RAINE STUDY PROJECT-SPECIFIC DATA COLLECTION COSTS

Each grant application must request separate funding to cover the costs of any project-specific measurements. This includes any additional personnel required to perform the measurements.

RAINE STUDY BIOLOGICAL SAMPLES

All grants proposing to use/collect blood or other biological samples are required to request funding for:

- **a half-time (0.5 FTE) phlebotomist (PSP1)** for 3 years
- any consumables associated with blood collection, preparation and storage (e.g. syringes, test tubes etc.)
- specific assay costs

Summary

Grants applications using **previously collected data**

Application must include the Raine Study Data Access Fee.

Grant applications to **collect new data**

Application must include the Raine Study Data Access Fee.

Include funding for

1 FTE (PSP1) cohort recruitment, 3 year period

1 FTE (PSP2) for data collection, 3 year period

In addition

Project specific data collection must include additional funding for

X FTE (PSP2) to cover project specific data collection, 3 year period

0.25 – 0.5 FTE (PSP2) recruitment if data collected at a different site, 3 year period

0.5 FTE (PSP1) phlebotomist if biological samples are collected, 3 year period

Grants wishing to collect only self-completed questionnaire data need to include

0.5 FTE (PSP2) recruitment and core data collection – 3 year period

Note: The above data collection staffing requirements are based on an estimated 2 to 3 grant applications being successful

ETHICS APPLICATION – BACKGROUND INFORMATION

A single ethics application will be submitted for the cohort follow-up. This is submitted through the Raine Study Scientific Directors to the UWA Human Research Ethics Committee (HREC). This will be co-ordinated centrally by the Study Manager with input from the investigators of all successful grants involved in funding the cohort review. All lead investigators will need to contribute towards this ethics application in terms of preparing scientific rationale, assessment protocols, questionnaire components etc.

ETHICS APPLICATION – SUGGESTED WORDING FOR GRANT APPLICATIONS

The applicants will work closely with the Raine Study Management to submit an application to the Human Research Ethics Committee.

COHORT REPRESENTATIVENESS – BACKGROUND INFORMATION

Cohort representativeness for Gen2 has been extensively evaluated, with details accepted for publication in a cohort profile. An excerpt from that paper is copied below, and a copy of the paper will be circulated to all investigators.

Straker, L., J. Mountain, A. Jacques, S. White, A. Smith, L. Landau, F. Stanley, J. Newnham, C. Pennell and P. Eastwood (in press (accepted 13th Sept 2016)). "Cohort Profile: The Western Australian Pregnancy Cohort (Raine) Study - Generation 2." *International Journal of Epidemiology*.

"The representativeness and presence of potential biases in the cohort have been examined with three sets of analyses. Eligibility and consent rates at the recruiting clinics were evaluated. Comparisons were made between the cohort participants and the Western Australian population at birth, childhood (year 8), adolescence (years 14 and 17) and young adulthood (years 20 and 22). Comparisons were also made between cohort participants and non-participants for all follow-ups.

At the time of recruitment, to assess whether the Raine Study cohort was representative of the population presenting at the recruitment sites, 6 months of clinic records in the middle of the recruitment period were audited. In the 131 clinic sessions 1420 women presented as new attendees and 707 (50%) were eligible. Reasons for ineligibility were: 36% were > 20 weeks gestation; 8% had language difficulties, 4% planned to deliver elsewhere and 2% had psychosocial problems precluding long term follow-up. Of the 707 eligible, 633 (90%) agreed to participate during the audited period (3).

At birth, the characteristics of the Raine cohort were compared with those of all live births (excluding Raine births) in Western Australia during the three year recruitment period utilising data from the WA Department of Health Midwives Notification System and Hospital Morbidity Database. Comparisons were made of birth weight, gestation age, neonatal nursery admission, pregnancy complications, Caesarean sections, maternal age, parous status, marital status, and race. Overall, the characteristics of Raine participants were similar to all Western Australian contemporaneous births except that Raine Study participants had slightly more pregnancies with complications and caesarean deliveries, and had more first time mothers and unmarried mothers (See Table1).

At the 8-year follow-up the characteristics of participating cohort families were compared with the Year 2001 Western Australian population census data (see Table 2). Demographic factors compared included family structure, state of residence, parents' place of birth, education, labour force participation and occupational status, income level, and language spoken at home. Overall differences between Raine study and WA population families were small except for more Raine parents residing in WA, being born overseas, more with post-secondary and tertiary education and in clerical/retail occupations, and less parents having low incomes.

At the 14 and 17 year follow-ups the cohort family characteristics of participants were compared with Year 2006 Western Australian population census data of families living in Western Australian with 15-17 year old children, as this was the most appropriately representative Western Australian demographic for comparison for either follow-up (see Table 3). Demographic factors compared included family structure, parents' place of birth, education, labour force and occupational status, income level and an index of advantage/disadvantage. Overall, the characteristics of the Raine families were similar to contemporaneous Western Australian families. There were no substantial differences in proportions of family structure, and an index of socio-economic advantage/disadvantage. There were more Raine families living in urban areas and with tertiary education. At 14 years there were more Raine parents in clerical/administrative occupations and middle incomes and at 17 these differences were reduced with a shift of Raine parents to technical and professional occupations and higher incomes.

At the 20 and 22 year follow-ups the characteristics of cohort members participating in data collection were compared with contemporaneous Year 2011 Western Australian census data of 20 and 22 year old males and females living in Western Australia, as the most appropriately representative Western Australian demographic for comparison (see Table 4, and supplementary Tables 1 and 2 show sex specific comparisons). Demographic factors compared included: family structure, education completed, labour force status, occupation, work hours, and income level. Overall, most comparisons showed the Raine cohort had similar proportions to all Western Australian young adults. Exceptions with more marked proportional differences (>10%) indicated the Raine cohort at 17 years had more employed in clerical/retail, more working 40 or more hours a week, and more with higher incomes.

To assess any attrition bias the characteristics at infancy of participants and non-participants were compared at each follow-up (see Tables 5, 6 and 7). In general, the proportions of participants and non-participants across a number of infant characteristics remained constant across all follow-ups. An exception was a gradual reduction in participation of infants of Aboriginal and Torres Strait Islander ethnicity. (Family characteristics are compared in the companion profile paper on the parents – Generation 1.)"

COHORT REPRESENTATIVENESS – SUGGESTED WORDING FOR GRANT APPLICATIONS

An extensive assessment of the representativeness and presence of potential biases in the cohort has been conducted. This has included comparison of the participants with the Western Australian population at birth, childhood, adolescence and young adulthood, along with comparisons between those participating and not participating at all follow-ups. In general the cohort was appropriately representative across a broad range of sociodemographic characteristics such as educational attainment, labour force status, occupational, income levels, family structure, area of residence, SEIFA index of relative advantage and disadvantage, and place of birth of parents/carers in comparison to Australian Bureau of Statistics census data on the Western Australian population of similar age. Similarly, the participants and non-participants at each follow-up generally remained constant across a number of infant characteristics.

SAMPLE SIZE - BACKGROUND INFORMATION

The current Raine Study phenotypic dataset contains more than 70,000 measures as well as over 20 million genetic variants on each cohort participant.

Antenatal data was collected from the mother at around 18 weeks of pregnancy, at 34 weeks and at birth. Information was collected from the fathers at 34 weeks.

The 1, 2, 3, 5, 8, 10, 14, 17, 20 and 22 year follow-ups have involved extensive collection of data through questionnaire and clinical examination of participants.

The cohort is currently undergoing the 27 year cohort review, with 1200 participants expected.

Follow-up numbers

***** PLEASE DO NOT USE THIS TABLE IN ANY GRANT APPLICATIONS *****

Follow-up	Completed	Deferred	Lost	Withdrawn	Died	Total
1	2441	204	174	21	28	2868
2	1988	381	418	51	30	2868
3	2280	321	158	79	30	2868
5	2237	339	135	127	30	2868
8	2140	376	124	198	30	2868
10	2047	281	162	348	30	2868
14	1860	357	207	412	32	2868
17	1754	414	184	480	36	2868
18 TSST	1137					
20	1473	603	236	519	37	2868
22	1234	852	176	566	40	2868

Deferred: Remain part of the cohort but not wanting to participate in the current follow-up.

Lost: We keep on trying to locate them.

Withdrawn: Withdrawn from cohort, no further contact from Raine staff unless they contact Raine to rejoin.

TSST: Trier Social Stress Test

- n=2900 pregnancies recruited in the ultrasound pregnancy cohort
- Mothers recruited between May 1989 and November 1991
- Babies born between August 1989 and April 1992
- resulted in 2834 singletons, 64 sets of twins, 2 sets of triplets (total 2900 mothers)
- Singleton pregnancies were randomised to an intensive ultrasound group (n=1415) and a regular ultrasound group (n=1419)
- The 2900 pregnancies recruited resulted in 2968 fetuses
- n=2868 livebirths recruited on the cohort follow-up
- n=2804 mothers agreed to remain with the study immediately following birth

*** We estimate that 1200 participants will complete the next assessment (Ge2_27 and Gen2_30) and ask all grants to budget accordingly ***

*** Therefore, we recommend that calculations of statistical power are based on a sample size of 1200. ***

SAMPLE SIZE - SUGGESTED WORDING FOR GRANT APPLICATIONS

The Raine Study management estimates that 1200 participants will complete assessments at the follow-up at age 30. This is based on 1234 of the available cohort (n=2086) participating in the last, 22 year, follow-up (60% participation rate, 1234/2086).

RAINE STUDY CONSUMER REPRESENTATION - BACKGROUND INFORMATION

Cohort retention through consumer involvement and consultation is paramount to the success of the Raine Study. The Raine Study access fee contributes towards costs of ongoing consumer involvement.

The Raine Study has an established consumer representative group consisting of ten Raine Study Participants. The group was formed in 2008 and they meet regularly with Raine Study Management and provide an important consultative and collaborative role on research proposals and cohort management issues. The group has control over the content of communication with study members (newsletters, information sheets, results, cards, competitions, websites, and meetings). They are consulted on areas for future research.

For new research proposals, workshops are held with the representative group, other Raine Study participants, Raine Study Research Team and investigators to discuss the proposals and what is required from the participants.

In addition to information provided to the representative group, regular feedback is provided to all participants through quarterly newsletters and booklets for participants.

The Raine Study informs participants of individual results. The Raine Study adheres to strict confidentiality protocols. The Raine Study has established feedback protocols in place and access to supportive networks in the clinical community where necessary for circumstances where participants may need support and advice.

Broader community involvement occurs through promoting healthy outcomes and publications and media releases on the Raine Study website.

CONSUMER GROUP - SUGGESTED WORDING FOR GRANT APPLICATIONS

Cohort retention through consumer involvement and consultation is paramount to the success of the Raine Study. The Raine Study access fee also contributes towards costs of consumer involvement.

The Raine Study has an active consumer representative group that provides a consultative and collaborative role on research proposals, questionnaires, information sheets and cohort management. Along with the reference group, a wider group of participants are invited to meet with researchers during the cohort assessment planning process. Overall results are communicated to the participants through newsletters and booklets. Media releases are used promote health outcomes to the wider community. The Raine Study website provides access to information, publications and media releases for consumers and the wider community. For new proposals, discussion workshops are held with investigators, the consumer group and a group of participants (n=20-25).

***PARTICIPANT ACCESS TO STUDY RESULTS, SUGGESTED WORDING FOR GRANT APPLICATIONS*.**

The Raine Study informs participants of their individual results and advises participants where necessary to access clinical review.

Published amalgamated research results are communicated to the participants through regular newsletters and the Raine Study website. The Raine Study has strict confidentiality protocols in relation to participant contact and support.

Investigators are encouraged to contact Jenny Mountain in the first instance with any queries regarding grant preparation.