

2025 RCP Pre-term Cerebellar Growth Chart RFA

The Raynor Cerebellum Project (RCP) aims to improve the lives of individuals with cerebellar disorders in the next seven to ten years, through new research initiatives and the fostering of a research culture of collaboration between labs at multiple institutions across multiple disciplines. The RCP is an experiment in “goal-oriented science,” with success defined by whether participants’ collective work improves patients’ lives.

We now invite applications from collaborative teams of researchers and clinicians to develop a growth chart for the cerebellum of individuals who were born extremely pre-term, that is <30 weeks of gestation. The growth chart should cover the interval from term age (or earlier) to 30 years old. We are looking to complement a normative growth chart that we are developing for full-term individuals so that we can understand the impact of extreme prematurity on the health of the cerebellum. We are committed to a significant investment in analyses using current data and technology, development of new technology and/or a new database, and innovative measures.

We are open to applications for three different strategies to understand the impact of extreme prematurity on cerebellar growth trajectories ***over the first 30 years of life.***

We are potentially interested in approaches that would assess the cerebellar cortex, the cerebellar nuclei, and/or the white matter inputs and outputs as ways to evaluate and measure cerebellar health and relative growth over time.

An individual may serve as PI on only one application for only one of the strategies. We ask that you pick the strategy you are most suited for – #1, #2 or #3 below – and submit only for that strategy. We truly encourage you to look at yours and your team’s skill set and where you most excel and focus your efforts in that area. Please be clear in your proposal which strategy you intend to deploy. [Note that you may serve as a contributor to multiple applications but as PI on only one.]

Strategy #1: Analysis, using either existing or novel tools, of existing datasets that include data from extremely pre-term individuals (<30 weeks gestation). The goal of strategy #1 would be to understand how cerebellar volume changes in pre-term individuals throughout development from birth to 30 years of age. *Up to \$1M over 2 years.*

Strategy #2: Development and validation of new analyses that use innovative biomarkers to assess the time course of cerebellar health. Approaches might include measures of surface area, volume, mass, white/gray ratio, white matter volume and integrity, pigmentation, or other variables. *Up to \$500K over 2 years.*

Strategy #3: Collection of new data from a large cohort of individuals who were born extremely pre-term. New datasets should include adequate longitudinal measures to allow statistical assessment of an individual’s cerebellar growth and/or other measures of cerebellar health across repeated assessments. We want the cohort to span from birth up to 30 years of age, but we

understand that new data collection will need to encompass a mix of longitudinal and stratified data. Up to \$5M over 5 years with the possibility of renewal.

Please note that because RCP has such a condensed timeline, we strongly prefer Strategies #1 and #2. We are considering Strategy #3 as an alternative if and only if we become persuaded that that other strategies are not going to deliver what we hope to achieve.

We conducted a *Request for Information* that informed us about some of the issues involved in creating a cerebellar growth chart for extremely pre-term individuals. We will be looking for collaborations that: (i) have the analytical skills to automatically segment and measure cerebellar growth metrics on a fine scale; (ii) possess or have a plan either to create an appropriate dataset of MRI scans and/or to reuse scans that are available from multiple groups, complete with a strong recruitment plan for collection of new data; (iii) can provide enough longitudinal data to allow statistical analysis of an individual's pattern of development; (iv) can validate that the resolution and signal-to-noise ratio of the source images are high enough to make repeatable measures; and (v) have a commitment and a plan for making the code and results openly available to other groups.

We anticipate that teams could be multi-site and interdisciplinary.

Review criteria:

Quality of science: Does the proposal have a high likelihood of leading to assessment of cerebellar health that is easy, accurate, less prone to error than current approaches, and highly predictive of current and future phenotype? Will the proposed approach harmonize in a way that allows valid comparison across scanners, sequences, and scan resolution?

Relation to the mission of RCP: How does the proposed research further the mission of the RCP? Will the proposed activities accomplish the stated goal?

Leadership plan: Who will be in charge? How will the leadership team interact? How will they establish accountability?

Execution plan: What is the staffing plan? How much effort will each person dedicate to this project? How will that effort be documented for RCP? We favor applications with a higher dedication of verifiable effort.

Definable Timeline: What can be accomplished in what timeline? How does what you are proposing improve the lives of those with cerebellar disorders in our timeline, while also providing a clear roadmap for follow-up studies and next steps allowing your idea to have an even greater impact?

Letters of Intent (LOI)

LOI's will include a 500-word overview of the project, as well as additional fields to answer specific questions listed on the submission site. Please review the application site before writing

your LOI. The submission process may be interactive, iterative, and updatable, and the Governing Board may reach out with questions or requests to clarify, enhance, and/or iterate upon your submission. Thus, early submissions have the potential for improvement that may make them more competitive.

In addition to the review criteria outlined above, submissions should include a ballpark estimate of the budget and timeline, though institutional approval is not yet required. At the next stage, we will ask finalists to explain how much effort will be devoted by the main contributors and to justify their levels of effort.

If you have any questions and/or would like to schedule a 20-minute call with the RCP Governing Board to answer any questions, please reach out to info@raynorcerebellumproject.org.