Date: September 18, 2017

To: Northwestern University Department Chairs, Center and Institute Directors and Faculty

From: H. William Schnaper, MD, Professor and Vice Chair, Department of Pediatrics, Irene Heinz Given and John Laporte Given Professor of Pediatric Research and Director NUCATS Institute TL1 Program
William M. Miller, PhD, Professor, Chemical and Biological Engineering, McCormick School of Engineering and co-Director, NUCATS Institute TL1 Program
Michael F. Fleming, MD, MPH, Director, NUCATS Institute Center for Education and Career Development and co-Director, NUCATS Institute TL1 Program
Donald M. Lloyd-Jones, MD ScM FACC FAHA, Senior Associate Dean for Clinical & Translational Research, Director, Northwestern University Clinical & Translational Sciences (NUCATS) Institute

Re: Request for applications for NUCATS Institute Multidisciplinary Training Program in Child and Adolescent Health postdoctoral fellowship research training program (TL1)

The Northwestern University Clinical and Translational Sciences Institute (NUCATS) is pleased to announce a call for applications for the Multidisciplinary Training Program in Child and Adolescent Health (TL1). The goal of this program is to train clinician scientists and engineers to conduct translational science that will improve the care of children and adolescents. This innovative program is funded as part of the NUCATS Institute Clinical and Translational Science Award (CTSA). The CTSA award is supported by the National Center for Advancing Translational Sciences at the National Institutes of Health.

The purpose of this communication is to invite TL1 trainee nominations from graduating PhDs and postdoctoral fellows at or applying to Northwestern University. Letters of Intent are due October 13, 2017 and full applications for the TL1 Training Program are due Friday, November 10, 2017. We will issue an updated RFA if positions remain available after the November 10 deadline and accept and review applications on a rolling basis until slots are filled. See the “Timeline of Events” section on the last page for application due dates, notice of award dates and funding start dates.

A. OVERVIEW
The overall goal of the TL1 is to address the US workforce need for well-trained clinician scientists and engineers by attracting talented trainees, equipping them with the tools to succeed and retaining their commitment to be independent investigators. The TL1 aims to train postdoctoral fellows in a creative and multidisciplinary environment that produces investigators equipped to apply translational scientific approaches to problems in child and adolescent health. The TL1 is a dynamic program that
promotes interactions among both mentors and trainees from multiple disciplines in order to encourage creative thinking and novel approaches to child-health translational science.

In order to accomplish this objective the TL1 program offers access to extensive research training resources including: mentor matching, seminar series on the Foundational Elements of Pediatric Translational Research, monthly sessions focused on Collaborative Approaches in Child and Adolescent (C&A) Health, team science training, catalyzing new teams and ideas, mentor development workshops, community mentors, research and methods mentors and support, grant writers groups, experiential learning opportunities and more. The TL1 program endeavors to catalyze creative, multidisciplinary partnerships between pediatrics, engineering and data science to improve child and adolescent health.

The TL1 program accepts applications from two types of trainees wishing to receive additional training and mentorship in clinical and translational science. Applications will be accepted from:

1. Clinical postdoctoral fellows pursuing training in child and adolescent health who desire to complement their clinical insight with research skills learned from mentors with diverse scientific backgrounds.

2. Graduating PhDs and PhD postdoctoral fellows from engineering and basic scientific disciplines – including areas such as bioengineering, synthetic biology, systems biology, informatics, population science, materials science, operations research, imaging, signal processing and analysis, gaming theory, robotics, machine learning, health services research, and communication disorders – who desire to apply their discipline to a project in child and adolescent health.

The award is open to individuals with doctoral-level degrees, including but not limited to: PhD, MD, DO, DC, DDS, DVM, OD, DPM, ScD, EngD, DrPH, DNSc, ND (Doctor of Naturopathy), PharmD, DSW, PsyD, or equivalent doctoral degree from an accredited domestic or foreign institution. Trainees for the TL1 program are accepted from a wide array of specialties, departments and schools and partner institutions across NU. For the purposes of this proposal, Engineering is broadly designed and includes, but is not limited to, such fields as Data Science, Biomedical Engineering, Industrial (process) Engineering, Chemical and Biological Engineering, Computer Science, Materials, Simulation, Prosthetics and Device development. Individuals from underrepresented racial and ethnic groups as well as individuals with disabilities are especially encouraged to apply.

The TL1 program provides support for up to two years and applications should be submitted that cover a training period of two years. The two-year training must include both mentored research and plans for other research training activities in child and adolescent health (see below). The second year of training is contingent on satisfactory progress during year 1.

Individuals who are funded by this mechanism will receive assistance in applying for other fellowship awards or independent grants during the period of this award. All trainees supported on the TL1 are expected to prepare an F or K-series grant early in year 2 of their appointment.

Postdoctoral fellows in the TL1 program will participate in an integrated didactic and mentored research program overseen by the TL1 Executive Leadership Committee (ELC). The ELC has been constituted to include members from diverse backgrounds to insure that all areas represented by NUCATS have input into the decisions of the TL1 program, including the selection of trainees, catalyzing innovative partnerships for the trainees, development and monitoring of trainee individual development plans (IDPs), and the identification of novel opportunities and approaches to research training in child and adolescent health. The ELC includes several experienced investigators and mentors as well as young investigators and developing mentors. The ELC is chaired by the TL1 Program Director, Dr. William Schnaper.
B. ELIGIBILITY and EXCLUSIONS
The eligibility and exclusion criteria are summarized below, but are similar for those listed for the Ruth L. Kirschstein National Research Service Award (NRSA) Institutional Research Training Grant (Parent T32). Information can be found at: https://grants.nih.gov/grants/guide/pa-files/PA-16-152.html
Northwestern University and the TL1 program are committed to identifying and implementing ways to create and support a diverse and inclusive campus community. As the TL1 strives for diversity of scientific discipline, we also strive for a community of fellows and mentors from different backgrounds and perspectives to engage in a mutual exchange of ideas and experiences. Those belonging to groups that have been traditionally underrepresented in research education and training (e.g., certain racial and ethnic minorities and individuals with disabilities) are strongly encouraged to apply to this program.

- Clinical postdoctoral fellows pursuing training in child and adolescent health who desire to complement their clinical insight with research skills learned from mentors with diverse scientific backgrounds.
- PhD postdoctoral fellows from engineering and basic, scientific disciplines including areas such as bioengineering, informatics, population science, health services research, materials science, operations research, imaging, signal processing and analysis, gaming theory, and communication disorders who desire to apply their discipline to a project in child and adolescent health.
- Postdoctoral trainees must have received, as of the beginning date of the NRSA appointment, a Ph.D., M.D., D.D.S., or comparable doctoral degree from an accredited domestic or foreign institution. Eligible doctoral degrees include, but are not limited to, the following: D.M.D., D.C., D.O., D.V.M., O.D., D.P.M., Sc.D., Eng.D., Dr. P.H., D.N.Sc., Pharm.D., N.D. (Doctor of Naturopathy), D.S.W., Psy.D, as well as a doctoral degree in nursing research or practice.
- The individual to be trained must be a citizen or a noncitizen national of the United States or have been lawfully admitted for permanent residence at the time of appointment. Additional details on citizenship, training period, and aggregate duration of support are available in the NIH Grants Policy Statement.
- Postdoctoral trainees supported by NRSA awards incur a service payback obligation for the first 12 months of postdoctoral support. The second year of NRSA postdoctoral support will serve to pay back the service obligation. See NIH Grants Policy Statement.
- As a TL1 Trainee, you agree to participate full time (minimum 40 hours per week) in your training and the associated career development activities provided by the TL1. Clinical postdoctoral fellows may continue limited clinical activities to maintain their training in relevant clinical skills and enrich the translational nature of their research, but still must meet the minimum 40 hours per week research training requirement.
- Appointments are for 2 years and are normally made in 12-month increments. No trainee may be appointed for less than 9 months during the initial period of appointment, except with prior approval of the NIH awarding unit, or when trainees are appointed to approved, short-term training positions.
- No individual trainee may receive more than 5 years of aggregate NRSA support at the predoctoral level or 3 years of support at the postdoctoral level, including any combination of support from institutional training and individual fellowship awards. Any exception to the maximum period of support requires a waiver from the NIH awarding office based on a review of the written justification from the individual trainee, and endorsed by the Program Director and the sponsoring grantee institution. Trainees seeking additional support are strongly advised to consult with the NIH awarding office.
• Candidates must have mentors with sufficient independent research support or institutional commitment to cover the costs of the proposed research project in excess of the allowable costs of the TL1. The use of mentoring teams including co-mentors to achieve the goals of the program is strongly encouraged. Candidates from outside or within Northwestern who would like help identifying a mentor and/or co-mentor are encouraged to contact Dr. Schnaper (schnaper@northwestern.edu) prior to submitting an application.

C. PROVISIONS OF THE AWARD

The award provides a number of tangible resources to support the research training in child and adolescent health for postdoctoral fellows committed to a career in clinical and translational science. Some of these provisions include:

• **Stipend**: Stipend will be set at the rate established by the National Institutes of Health (NIH) at time of appointment. For more information, click here: [https://grants.nih.gov/grants/guide/notice-files/NOT-OD-17-003.html](https://grants.nih.gov/grants/guide/notice-files/NOT-OD-17-003.html)

• **Appointment period**: Up to two years; second year contingent on satisfactory progress during year one.

• **Travel expenses**: Up to $1500 per appointment year for travel to present at the annual Association of Clinical and Translational Science (ACTS) Conference in Washington, D.C.

• **Tuition**: Funds are available for trainees to take courses in the Master of Science in Clinical Investigation (MSCI) program or other associated Feinberg School of Medicine graduate programs. Trainees will be encouraged, as part of the individual development plan (IDP) process and in consultation with their mentoring teams, to participate in courses to supplement their current knowledge and expertise.

• **Research Analysis and design Methods Program (RAMP) Mentor Support**: RAMP mentors provide individualized, hands-on and educational mentorship in the areas of biostatistics, epidemiology, bioinformatics, qualitative research methods and health services research. All trainees are eligible for a free, two-hour consultation, and trainees who desire further RAMP support should communicate this to the ELC.

• **Mentor Matching**: During the application review process for the TL1, the ELC will note specific areas of importance to the candidates and areas that may require additional support from the program including RAMP support, community stakeholder engagement support, and secondary mentors that might uniquely support the career development goals of the trainee. Because this training grant mechanism seeks to encourage the application of engineering solutions to problems in Child and Adolescent Health, expert input from both fields would be ideal in project development and execution. Applicants who would like additional ideas on catalyzing collaboration with a mentor in another area of research are invited to reach out to the TL1 Director during the application process to discuss potential options.

• **Team Science Training**: The TL1 will provide Team Science training to support the trainees in their career stage. This workshop will focus on face-to-face simulated exercises to assist trainees in analyzing the effects of collaboration on overall outcomes, and to provide practical action planning for teams to help them implement best practices in collaboration as they move forward with their projects.

• **Foundational Elements of Pediatric Translational Research**: TL1 trainees will be required to participate in monthly seminar series that will cover the core competencies in pediatric translational research including study design in the pediatric environment, biomedical informatics for pediatric studies, responsible conduct of research for vulnerable populations, translational research teamwork, data-driven discovery in child and adolescent health, unique research methodology, application of complex systems concepts in child and adolescent health, team science and community stakeholder engagement in the pediatric setting. It will provide important foundational knowledge for TL1 trainees to begin to conduct translational research.
research in the pediatric setting or to apply their current research portfolio to child and adolescent health.

- **Collaborative Approaches in Child and Adolescent Health Seminar Series:** This monthly seminar series is designed to provide trainees with an opportunity to present their research, engage in peer-mentoring, networking and discussion of contemporary topics in pediatric translational research. The goal is to maximize cross-disciplinary exposure while highlighting common principles of career development.

- **Experiential Learning Opportunities:** Trainees will have access to opportunities to enrich their experience or enhance their understanding of core health issues by linking them with clinicians (for PhDs) or other labs (for clinicians); or by meetings with health experts or representatives of biomedical industry.

- **Grant Writing Group:** All trainees will engage in grant writing workshops held once a month. All participants will come to sessions with assigned sections of F32s/K proposals drafted for workshopping and critique in a supportive, collaborative environment.

- **Community Stakeholder Engagement:** TL1 trainees will have access to didactic training on engaging community stakeholders to support trainees in appreciating the potential value of integrating community perspectives in their translational research. Trainees will also be encouraged to consider working with at least one community stakeholder who has a vested interest in improving the health and well-being of Chicagoland communities and in training future translational science investigators. Community stakeholders might support the trainee’s research in a particular population, provide additional resources for the trainee, or facilitate dissemination of research findings. In addition, in 2015, Lurie Children’s implemented the KIDS program in cooperation with the Illinois Chapter of the American Academy of Pediatrics (AAP) in 2015. This program is an advisory group of children, adolescents and families focused on understanding, communicating, and improving health, medicine, research and innovation for children. TL1 Trainees may work with the KIDS program, creating an environment that embeds stakeholder engagement in the research training environment. As an example, a workshop will involve children and families discussing how best to approach them to elicit their participation in research.

### D. TERMS OF THE AWARD

**Career Development Activities:**

As a TL1 Trainee, you agree to participate full time (minimum 40 hours per week) in your training and the associated career development activities provided by the TL1. Clinical postdoctoral fellows may continue limited clinical activities to maintain their training in relevant clinical skills and enrich the translational nature of their research, but still must meet the minimum 40 hours per week research training requirement. You will create an Individual Development Plan (IDP) in collaboration with your mentor(s) and the TL1 Executive Leadership Committee and will meet regularly with the ELC and TL1 leaders to ensure your success. You will take part in the following activities and experiences to enhance your knowledge of clinical and translational sciences:

- Participate in a boot-camp orientation meeting with your mentor to learn more about the program and the resources of the NUCATS Institute and the TL1 and to develop your initial IDP.

- Create and present an IDP to the ELC within 2 weeks of the orientation boot-camp.

- Attend and present your research at the annual Association of Clinical and Translational Science (ACTS) Conference in Washington, D.C. This conference takes place in April each year and is a valuable national networking opportunity for TL1 trainees. The program includes educational activities, poster sessions, NIH tours, visits to Capitol Hill, and mock study section review opportunities for R, K and F awards. Additional information can be found at: [http://www.actscience.org/ts2017](http://www.actscience.org/ts2017) Trainees wishing to attend a different conference should discuss with TL1 leadership.
• Participate in required training activities including:
  – Team Science training
  – Responsible Conduct of Research training (or demonstrate that you are currently up-to-date in your required RCR training)
  – Foundational Elements of Pediatric Translational Research seminar series (monthly)
  – Collaborative Approaches in Child and Adolescent Health seminar series (monthly)
  – Grant-writing group
• Demonstrate significant progress towards an individual F or K award application by the end of the first year of funding.
• Attend defined meetings with the Executive Leadership Committee and TL1 leadership.

Program Administration and Requirements – Trainee:
• Verify eligibility for the program as a (1) US citizenship or (2) non-citizen nationals, or (3) permanent residence and possess an Alien Registration Receipt Card (I-151 or I-551) or some other verification of legal admission as a permanent resident.
• Complete required NIH appointment procedures in the eRA Commons XTrain system.
• Participate with your research administrator in a welcome meeting with TL1 administrators.
• Participate in evaluation, feedback and surveys administered by the NUCATS Institute.
• Obtain and report IRB and IACUC approval as appropriate for any project that involves live vertebrate animals or human subjects.
• Comply with all NIH policies related to human subjects and live vertebrate animal research as appropriate.
• Receive FEDERAL FUNDING ONLY FROM THE TL1 PROGRAM for the duration of your appointment. TL1 trainees are not permitted to receive any additional federal funding as this award is to support your full time (40 hour) activities. You may be permitted to receive funds from non-federal sources to supplement your stipend. Please follow up with Ginne Meyers at the NUCATS Institute for additional information.

Program Administration and Requirements – Mentor:
• Mentors will participate in the orientation boot camp, IDP development and annual status updates with the TL1 Executive Leadership Committee.
• Mentors will provide information to the NUCATS Institute annually for required NIH TL1 progress reports related to the progress of their mentees.
• Mentors will provide training related expenses to the trainees for their research projects.

E. INSTRUCTIONS FOR PROPOSAL
This proposal will use the NITRO Competitions system for applications and review. Proposal development instructions (and required forms) can be found at: https://nucats.northwestern.edu/education-career-development/tl1-proposal-directions.

October 13, 2017 (by midnight) – Letter of Intent Due
• Letter of intent to apply due from the potential trainees. Letters of intent should be sent to g-meyers@northwestern.edu. This letter should include:
  – Project Title
  – Name of Institution
  – Department
  – Chair Name
  – Primary Mentor Name
  – Co-Mentor Name (from a different discipline or department)
  – 30 line project abstract
November 10, 2017 (by midnight) – Full Applications Due

Description of Items to be Submitted:

- **First Page of PHS 398**
- Proposal (limit 4 pages)
  - Candidate’s Background (limit 1 page)
  - Career Goals and Objectives with a focus on child and adolescent health (limit 1 page)
  - Research Project with a focus on child and adolescent health (limit 2 page)
- **NIH Biosketches**
  - Trainee, primary mentor and co-mentor.
  - Must include eRA Commons Username for each.
  - Classroom support for the new NIH biosketch from the Galter Library is available here: [http://galter.northwestern.edu/course_info/204](http://galter.northwestern.edu/course_info/204)
- **Letters of Support**
  - Required Letters: Department Chair, Primary Mentor, Co-Mentor (from a different discipline or department; see below)
  - Trainees are expected to work as part of multidisciplinary teams and support from a secondary mentor (from a different discipline or department) is required. Applicants who would like additional ideas on catalyzing collaboration with a mentor in another area of research are invited to reach out to Dr. Schnaper or Dr. Miller during the application process to discuss potential options.
  - For applicants outside of Northwestern University please feel free to contact Dr. Schnaper or Dr. Miller for help identifying a primary mentor and co-mentor.
  - Additional letters as appropriate from Co-Mentors or Consultants
  - Applicants from other institutions or who have recently arrived at Northwestern University are also encouraged to provide one or two letters of support from their current/prior institution.
  - Letters should document the role of the primary and co-mentor in the career development of the trainee and how the work proposed fits into the overall program funded by the mentor.
- **Candidate Curriculum Vitae**
- **TL1 Applicant Data Form via REDCap**

How to Submit Proposal:

- Materials for submission should be uploaded into the NITRO Competitions located at: [https://accounts.nubic.northwestern.edu/people/sign_in](https://accounts.nubic.northwestern.edu/people/sign_in)
- Instructions for how to navigate the NITRO Competitions system and complete upload can be found at: [http://nucats.northwestern.edu/funding/nitro-competitions-user-guide-applicants](http://nucats.northwestern.edu/funding/nitro-competitions-user-guide-applicants)
- Technical support for submissions in NITRO Competitions can be reached at: competitions@northwestern.edu
- Upload should be in 2 part:
  1. **Application Document** (.pdf file) through NITRO, includes:
     a. **First Page of PHS 398**
     b. Proposal (limit 4 pages)
        - Candidate’s Background (limit 1 page)
        - Career Goals and Objectives (limit 1 page)
• Research Project (limit 2 page)

c. Biosketches for Trainee and Primary Mentor
   1. Must include eRA Commons Username for each.
   2. Please use updated NIH biosketch format.
   3. Tutorial from the Galter Library on the new NIH biosketch is available here:
   4. Classroom support for the new NIH biosketch from the Galter Library is available here:
      http://galter.northwestern.edu/course_info/204

d. Letters of Support
   1. Department Chair (required)
   2. Primary Mentor
   3. Co-Mentor (from a different discipline or department) (required)
   4. Additional Co-Mentors and Consultants (optional)

e. Candidate Curriculum Vitae
   2. TL1 Applicant Data Form via REDCap

F. SELECTION CRITERIA
Optimal proposals will seek to find engineering (as broadly defined) solutions to problems in pediatric health. The following criteria will be employed to evaluate the submitted proposals. Please take this into account in preparing the proposal. The NIH scoring system will be used to evaluate proposals. Each of the following areas will be evaluated using a nine-point score:
   • Overall Impact
   • Candidate
   • Career Goals & Objectives
   • Research Proposal
   • Mentor(s), Consultant(s), Collaborator(s)
   • Environment and Institutional Commitment to the Candidate
   • Impact on Child and Adolescent Health

The evaluations of each proposal will be returned to the applicant with the intent that the feedback will be helpful to those who are funded and will assist those who are not funded to submit competitive F32 awards.

G. TIME LINE OF EVENTS
The table below lists the application due dates, notice of award dates and the tentative funding start dates for the TL1 program.

Applications must be submitted by the application due date indicated below. If, after review, positions remain unfilled, further applications will be considered on a rolling basis. Please visit the TL1 website for additional information about the number of current open slots in the program.

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<tr>
<th>Letter of Intent Due</th>
<th>Application Due</th>
<th>Notice of Award</th>
<th>Tentative Funding Start Date</th>
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<tbody>
<tr>
<td>October 13, 2017</td>
<td>November 10, 2017</td>
<td>January 12, 2018*</td>
<td>March 1, 2018</td>
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*Date is subject to change based on availability of the review panel
H. SUPPORT FOR APPLICANTS
Technical questions about NITRO Competitions can be directed to: competitions@northwestern.edu.

Process related questions can be directed to Ginne Meyers at 312-503-5811 or g-meyers@northwestern.edu.

Questions related to selection of mentors or co-mentors and/or potential candidate eligibility or qualification can be directed to Bill Schnaper at schnaper@northwestern.edu.

We look forward to your response to this solicitation.