

MATERIALS TRANSFER AGREEMENT

Provider:

U.S. Environmental Protection Agency (EPA)
Office of Research and Development (ORD)
National Center for Computational Toxicology (NCCT)

Recipient: Provost Sarah Susannah Willie-LeBreton, Swarthmore College

1a. Provider agrees to transfer to Recipient's Investigator named below the following Research Material:

Chemicals and Materials

- A list identifying selected chemicals from the ToxCast chemical library to be tested by **Eva-Maria S. Collins**.
- A copy of the current ToxCast chemical library, or subset, consisting of chemical samples prepared as solution in dimethyl sulfoxide at a concentration of 20 millimolar. Additional chemicals may be provided in the future concurrent with expansion of the ToxCast chemical library.
- Samples of nanomaterials and characterization data on said materials.

Data and Summary Information

- In vitro assay data derived from the ToxCast Program. This data is derived from chemicals analyzed using a variety of high throughput assay techniques. Below this is referred to as the "ToxCast Data".
- In vivo whole animal toxicology data summary data derived from the EPA Toxicology Reference Database (ToxRefDB). Below this is referred to as the "ToxRefDB Data".
- Summary descriptions of the individual data sets.
- Individual subsets of this data will be delivered to XXX after they have been prepared for use at EPA and cleared for release to XXXX.

1b. The Recipient agrees to transfer to the EPA Investigator named below the following Research Material:

- All data or data summaries resulting from chemical screening performed on the ToxCast chemical library.
- Results of any data analyses that include use of provided ToxCast or ToxRef data.
- Relevant data on these chemicals from non-public sources.
- Unique chemicals for the ToxCast chemical library and subsequent testing by EPA.

2. This Research Material may not be used in human subjects. The Research Material will be used only for research purposes by Recipient's investigator in his/her laboratory, for the research project described below, under suitable containment conditions. This Research Material will not be used for screening, production or sale, for which a commercialization license may be required. Recipient agrees to comply with all Federal rules and regulations applicable to the Research Project and the handling of the Research Material.

EPA ONLY: If the data or material that are being transferred constitute human subjects research, please visit the following intranet site to determine if your project needs review and approval by the HSRRO: <http://intranet.ord.epa.gov/p2/hsr/human-subjects-review>.

There is no Human Subjects material being used in this research.

Research Plan reviewed and approval by HSRRO: Name _____
Date ___/___/_____

3. If the data or material that are being transferred involve life sciences research or more specifically, any of the select agents or toxins listed, and/or the definitions provided in EPA Order 1000.19 *Policy and Procedures for Managing Dual Use Research of Concern*, then Principal Investigators should consult EPA's Institutional Contact for Dual Use Research of Concern (ICDUR) at DURC@epa.gov before completing the following section. If not, then check the first box below.

This research does not meet any of the definitions of Dual Use Research of Concern (DURC) and no additional review or oversight are required. The PI must report to the ICDUR any results or changes in the research that meet any of the definitions of DURC.

This research meets one or more definitions of DURC and requires additional oversight under the *USG Policy for Institutional Oversight of DURC*. The parties to this Agreement are required to comply with EPA Order 1000.19, *Policy and Procedures for Managing Dual Use Research of Concern*.

For information about DURC and EPA Order 1000.19, please visit:

<http://intranet.ord.epa.gov/homeland-security/dual-use-research-concern-durc-policies>.

4. This Research Material will be used by Recipient's investigator solely in connection with the following research project ("Research Project") described with specificity as follows:

My research group has pioneered an automated high-throughput screening (HTS) platform for evaluating chemicals for (developmental) neurotoxicity using freshwater planarians (see e.g. Zhang et al., *Toxicological Sciences*, 2018). Using automated technology, we monitor planarian viability as well as several morphological and behavioral endpoints in both adult and developing planarians in parallel. This gives us the unique opportunity to determine chemicals or concentrations that are developmentally selective.

As an invertebrate system with a complex, yet tractable central nervous system, planarians exhibit a broad repertoire of quantifiable behaviors that exceeds all currently used alternative animal models and meets the EPA's recent Strategic Plan to develop alternative systems that have the capacity to replace, refine and/or reduce ("3R") vertebrate toxicology testing. We have already shown using an 87-compound library from the National Toxicology Program (NTP) that our platform is sensitive and highly concordant with mammalian studies for known toxicants (see Zhang et al., *Toxicological Sciences*, 2018 and Hagstrom et al., *Toxicological Sciences*, 2018).

By evaluating the large, well-characterized ToxCast Phase I and II libraries of diverse chemicals, we will quantify the predictive power of our system and its limitations. Concordance analysis of our data with existing vertebrate guideline studies will determine the utility of planarian HTS for reducing and/or replacing mammalian animal testing. By comparing affected endpoints in planarians with the endpoints affected in mammals, we will also be able to determine whether specific endpoints in planarians are predictive of endpoints in rodents. This is important for validation and potential implementation of planarian HTS to reduce testing in rodents.

Additionally, because these libraries have already been tested in nematodes and developing zebrafish, we will evaluate the value of information of the planarian system compared to these more established alternative animal models.

This study will produce a wealth of new data of the ToxCast Phase I and II libraries on various behavioral outcomes spanning different neuronal functions, which will complement existing data on developmental endpoints.

5. In all oral presentations or written publications concerning the Research Project, Recipient will acknowledge Provider's contribution of this Research Material unless requested otherwise. To the extent permitted by law, Recipient agrees to treat as confidential, any of Provider's written information about this Research Material that is stamped "CONFIDENTIAL" for a period of three (3) years from the date of its disclosure to recipient. The foregoing shall not apply to information that is or becomes publicly available or which is disclosed to Recipient without a confidentiality obligation. Any oral disclosures from Provider to Recipient, which Provider wishes to be treated as confidential shall be identified as being Confidential at the time of the disclosure and by written notice delivered to Recipient within thirty (30) days after the date of the oral disclosure. Recipient may publish or otherwise publicly disclose the results of the Research Project, but if Provider has given Confidential information to Recipient, such public disclosure may be made only after Provider has had thirty (30) days to review the proposed disclosure to determine if it includes any Confidential information, to the extent such review period is permitted by law.

6. This Research Material represents a significant investment on the part of Provider and is considered proprietary to Provider. Recipient's investigator therefore agrees to retain control over this Research Material and further agrees not to transfer the Research Material to other people not under his/her direct supervision without advance written approval of Provider. Provider reserves the right to distribute the Research Material to others and to use it for its own purposes. When the

Research Project is completed, the Research Material will be returned to the Provider or disposed, if directed by Provider.

7. This Research Material is provided as a service to the research community. It is being supplied to Recipient with no warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose. Provider makes no representations that the use of the Research Material will not infringe any patent or proprietary rights of third parties.

8. Recipient shall retain title to any patent or other intellectual property rights in inventions made by its employees in the course of the Research Project. However, if said inventions contain any portion of the Research Material, are derived from the Research Material, or could not have been produced but for the use of the Research Material, Recipient agrees to contact the Provider to determine what ownership interests, if any, the Provider may have, and, where applicable, to negotiate in good faith the terms of a commercial license. Inventorship for a patent application or a commercialized product based on said inventions shall be determined according to United States patent law.

9. When Provider is the EPA: Recipient agrees not to claim, infer, or imply endorsement by the Government of the United States of America (hereinafter referred to as "Government") of the Research Project, the institution or personnel conducting the Research Project, or any resulting product(s). Recipient agrees to hold the Government harmless and to indemnify the Government for all liabilities, demands, damages, expenses, and losses arising out of Recipient's use for any purpose of the Research Material.

10. When Recipient is the EPA: Provider will not be liable to EPA for any claims or damages arising from EPA's use of the Research Material.

11. The Provider shall have the right to terminate this Agreement at any time if Recipient breaches any of the terms of this Agreement. Upon termination, Recipient shall return to the Provider all unused portions of the Research Materials.

12. Will EPA develop any products or services from information or materials provided by the Recipient?

Yes – go to item A

No – skip to #13 (next clause)

Item A: The EPA laboratory must coordinate on matters related to Quality Assurance with their QA Specialist.

If necessary, the Laboratory will develop/has developed a Quality Assurance Plan in coordination with the Quality Assurance Specialist.

X No QA requirements are needed.

13. All notices pertaining to or required by this Agreement shall be in writing and shall be signed by an authorized representative and shall be delivered by hand (including private courier mail service) or sent by certified mail, return receipt requested, with postage prepaid, addressed as follows.

Provider's Contact Information:

Russell Thomas

U.S. EPA National Center for Computational Toxicology (NCCT)

109 T.W. Alexander (MD-B-205-01)

Research Triangle Park, NC 27711

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With a copy to:

Sandra Roberts

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Recipient's Contact Information:

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14. Paragraphs 2, 7, 9, and 10 shall survive termination.

15. This Agreement shall be construed in accordance with law as applied by the Federal courts in the District of Columbia.

16. The undersigned Provider and Recipient expressly certify and affirm that the contents of any statements made herein are truthful and accurate.

17. This agreement shall enter into force as of the date of the last signature of the parties and shall remain in effect for one year from said date.

Any false or misleading statements made, presented, or submitted to the Government, including any material omissions, under this Agreement and during the course of negotiation of this Agreement are subject to all applicable civil and criminal statutes including 31 U.S.C. §§ 3801-3812 (civil liability), 18 U.S.C. §§ 1001 (criminal liability), and 31 U.S.C. §§ 3729-33 (False Claims Act).