

## MATERIALS TRANSFER AGREEMENT

**Provider:**

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

**Recipient:**

ZenBio, Inc.  
P. O. Box 13888  
3200 East Hwy 54, Suite 100  
Research Triangle Park, NC 27709

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 Zen-Bio, Inc.
- 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 XXXX after they have been prepared for use at EPA and cleared for release.

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.

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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.

3. Does the research involve specimens or data derived or collected from human subjects?

No

Yes – I am seeking review and approval from the HSSRO. Assurance Number \_\_\_\_\_

4. The Dual Use Research of Concern (DURC) Internal Review Entity (IRE) has determined that:

This research does not meet the Dual Use Research of Concern (DURC) definition and no additional review and oversight are required. The PI must report to the IRE any results or changes in the research such that one or more of the 7 categories of experimental effects may apply, or if the PI feels that the research may be DURC.

This research meets the DURC definition and requires additional oversight under the *USG Policy for Institutional Oversight of DURC*. Corresponding USG funding agency will be notified and a draft of the mitigation plan will be submitted within 90 days of this determination.

Mitigation Plan submitted to the funding agency on \_\_\_\_\_

Approved mitigation Plan on file

5. 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:

***Please see attachment***

6. 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.

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7. 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.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. 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)

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Item A: The EPA has a long history of applying principles of quality assurance/quality control to all technical work conducted by or for the Agency (CIO 2106: USEPA Quality Policy). The Recipient is required to provide EPA with documentation such as a quality manual, describing their organization's quality system. In lieu of such documentation, Standard Operating Protocols for compound handling and the assays performed are acceptable or documentation showing third party accreditation to a relevant standard and scope is also acceptable for documenting an organization's quality system. EPA requirements for quality management plans can be found at this URL: [http://www.epa.gov/quality/qa\\_docs.html](http://www.epa.gov/quality/qa_docs.html)

14. 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  
National Center for Computational Toxicology (NCCT)  
US EPA  
109 TW Alexander (MD-D143-03)  
Research Triangle Park, NC 27711  
Tel: 919-541-5776  
Thomas.russell@epa.gov

With a copy to:  
Sandra Roberts  
National Center for Computational Toxicology (NCCT)  
US EPA  
109 TW Alexander (MD-D143-03)  
Research Triangle Park, NC 27711  
919-541-3850  
Roberts.sandra@epa.gov

For commercial courier address use:  
4930 Old Page Rd.  
Durham, NC 27703

AND

Sarah Bauer  
EPA FTTA Program Coordinator  
(Overnight courier address)

EPA-ZenBio MTA #1004-18  
ToxCast  
US EPA MC 8106R  
Ronald Reagan building Room 71175  
1300 Pennsylvania Ave NW  
Washington, DC 20004  
202-564-3267

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**Recipient's Contact Information:**

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3200 East Highway 54, Suite 100  
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919-547-0693 (fax)  
heather@zen-bio.com

With a copy to:

Benjamin Buehrer, Ph.D., Vice President  
Zen-Bio, Inc.  
PO Box 13888  
3200 East Highway 54, Suite 100  
RTP, NC 27709-3888  
919-547-0692 (phone)  
919-547-0693 (fax)  
[ben@zen-bio.com](mailto:ben@zen-bio.com)

15. Paragraphs 2, 8, 10 and 12 shall survive termination.

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

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

18. This agreement shall enter into force as of the date of the last signature of the parties and shall remain in effect for three years 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).

## RESEARCH PROJECT ATTACHMENT

The chemical libraries shall be used in cell-based screens to identify compounds that affect critical metabolic pathways, initially using human primary pancreatic islets.

- 1) The effects of the compounds on the viability and function of human primary islet cell types will be tested by direct measurement. Epidemiological studies have repeatedly investigated the link between exposure to certain environmental chemicals and the onset and progression of type 2 diabetes (T2D). The ability to screen environmental agents for biological and toxicological activity can provide a more systematic source of data, thereby guiding new epidemiological studies. The Zen-Bio screening platform characterizes cell type-specific toxicity for the major endocrine cell types of the pancreas: alpha cells (responsible for systemic levels of glucagon) and beta cells (responsible for systemic levels of insulin) using a multiplexed high throughput, high content human primary cell-based assay. This screen will identify compounds that are beta cell- and alpha cell-specific toxicants, as well as, compounds that are toxic to both cell types. These data will provide direct evidence to link environmental chemicals to T2D.

Additional screens that are contemplated include human skeletal muscle insulin sensitivity, human adipocyte differentiation and lipolysis, and hepatocyte glucose output.