

## **BUSINESS PLAN**

### **Evelyn F. McKnight Brain Institutes: Inter-Institutional Bioinformatics Core**

#### **The Mission Statement**

The McKnight Brain Research Epigenetics Core will pioneer a comprehensive program to test an epigenetic hypothesis of cognitive aging, working collaboratively with all the Evelyn F. McKnight Brain Institutes. The goal is to establish a shared Inter-Institute resource to provide a catalyst for discoveries in the area of epigenetics of cognitive aging. This is envisioned to be a “core without walls” to provide support for bioinformatic analysis of high-throughput DNA/RNA sequencing and epigenomics, bio-informatics, and cross-correlation of human and animal studies.

#### **Deliverables**

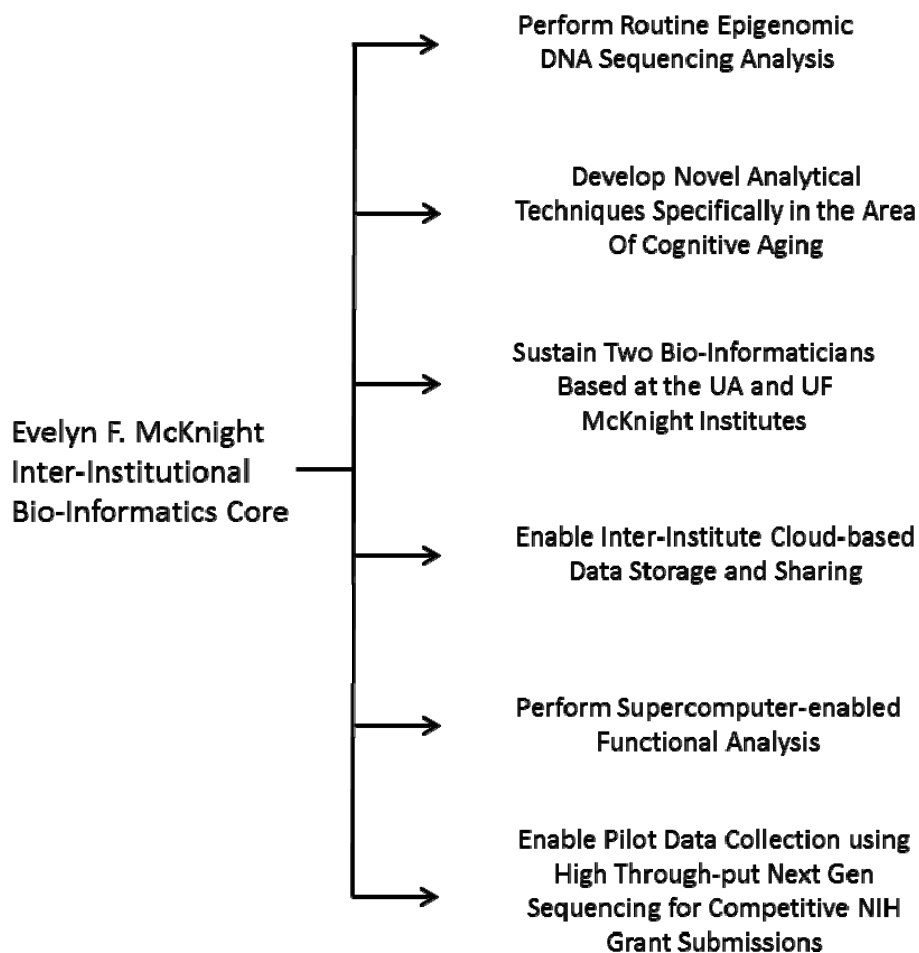
The first deliverable will be the establishment of an inter-institutionally available core infrastructure through which all four McKnight Institutes (Miami, UF, UAB, and Arizona) will be able to obtain state-of-the-art bio-informatics analysis and next-generation sequencing capacity. This will allow the McKnight Institutes as a group to achieve and sustain a leading role in the emerging new discipline of neuroepigenetics, specifically as related to cognitive aging. (See below, Figure 1, for more specifics on this aspect of the plan.)

The tangible outcomes of this endeavor will be several: 1. Multi-author inter-Institute collaborative scientific publications in the area of an epigenetic basis for cognitive aging. 2. New grant funding, and renewal of existing grant funding, for the Institutes at the end of the two-year funding period. In this regard, a specific target will be the acquisition of government funding to sustain the Inter-Institute Bioinformatics Core, through the submission of collaborative research proposals. 3. The establishment of the inter-Institutional bioinformatics infrastructure will allow the basic scientists based at UF, UA, and UAB to capitalize upon the existing powerful and comprehensive human genomics datasets already available at the University of Miami. This will allow cross-fertilization of lab animal and human clinical data. 4. Substantial leveraging of the initiative from individual research grants is highly likely. As described in the main proposal there is already significant leveraging of the overall project in place at all four MBI's including both research funds and equipment infrastructure.

Timely periodic status and progress reports will be submitted to the trustees of the MBRF as appropriate or at least annually.

In Terms of Specific Deliverables, the Evelyn F. McKnight Inter-Institute Bio-informatics Core will provide the following services (see Figure 1).

1. High-throughput epigenomic and mRNA sequencing analysis and technical support. Currently, some sequencing capability is available at each of the institutes.
2. Top-flight bio-informatics, for both routine analysis and novel analytical techniques.
3. Shared data storage and rapid transfer of data and analyses between and among the four participating MBI's.
4. Supercomputer time for bio-informatic analysis.
5. Coordinated tissue sharing, both human and animal.
6. Facilitated collection of animal data regarding transcriptional dysregulation in aging, allowing focused hypotheses for human experiments to be developed.
7. Information on common standardized protocols in all these domains, for consistency across MBI groups.



**Figure 1**

### Financial Information:

The trustees of the MBRF have approved a block grant of \$300,000 annually for two years. The funds will be deposited in the Inter-Institutional Bioinformatics Account, and the Heads of the McKnight Brian Institute at the University of Florida (Dr. Ashizawa), the University of Arizona (Dr. Barnes) will have the authority to receive funds to be disbursed from the Inter-Institutional Bioinformatics Account. As overall organizer of the project, Dr. Sweatt at UAB will also have authority to approve disbursement of funds if necessary.

It is important to emphasize that while the equipment infrastructure and services will be based at the University of Florida and the University of Arizona, and thus the accounting and costs disbursement will be administered through those two entities, all four MBI's will utilize the Core and have equal access to its services.

**Evelyn F. McKnight Inter-Institute Bio-informatics Core**  
**University of Arizona EMBI Budget**  
**ERE Rate: Faculty (30%)**

	Effort	Year 1	Year 2	TOTAL
<b>Personnel</b>				
Bioinformatician (to be named)	50%	\$40,000	\$0	\$40,000
Bioinformatician (to be named)	100%	\$0	\$80,000	\$80,000
<b>Subtotal Personnel</b>		<b>\$40,000</b>	<b>\$80,000</b>	<b>\$120,000</b>
<b>Fringe Benefits</b>				
Bioinformatician (to be named)	50%	\$12,000	\$0	\$12,000
Bioinformatician (to be named)	100%	\$0	\$24,000	\$24,000
<b>Subtotal Fringe Benefits</b>		<b>\$12,000</b>	<b>\$24,000</b>	<b>\$36,000</b>
<b>Subtotal (Personnel and Benefits)</b>		<b>\$52,000</b>	<b>\$104,000</b>	<b>\$156,000</b>
<b>Supplies</b>				
Animal Purchase (12 9mo; 12 24mo)		\$5,160	\$0	\$5,160
Animal Per Diem (24 x 60 days x \$1.03/day)		\$1,483	\$0	\$1,483
Reagents		\$20,000	\$15,000	\$35,000
Sequencing Supplies		\$50,000	\$19,240	\$69,240
Infrastructure (data storage, programs, updates)		\$15,597	\$6,000	\$21,597
<b>Subtotal Supplies</b>		<b>\$92,240</b>	<b>\$40,240</b>	<b>\$132,480</b>
<b>Travel</b>				
2 trips per year (3 people/2 night duration)				
<b>Subtotal Travel</b>		<b>\$5,760</b>	<b>\$5,760</b>	<b>\$11,520</b>
<b>TOTAL COSTS</b>		<b>\$150,000</b>	<b>\$150,000</b>	<b>\$300,000</b>

**Year 1**

- 1) Bioinformatician: \$52,000. Focus: For the first year, a half-time bioinformatician in Arizona will be responsible for the processing of the projects allotted to Arizona's infrastructure. This will include data sharing. Additionally, the bioinformatician in Arizona will provide expert analytical approaches to the data including the creation of publication quality figures to illustrate the key findings of the work.
- 2) Supplies: \$92,240. Includes young and old animals to be given a behavioral test battery before sacrifice for the cognitive aging experiments, the reagents used for preparing the brain tissue, laser capture supplies, sequencing costs and the costs of scaling up data sharing platforms are included in this category.
- 3) Travel: \$5,760. Two trips per year from Arizona to a designated meeting site for 3 investigators to share data, methods, finalize manuscripts and grant writing.

**Year 2**

- 1) Bioinformatics: \$104,000. This position will increase to full-time for this final year when we will have data from all projects being analyzed.
- 2) Supplies: reagents, sequencing costs and analysis platform upgrades.
- 3) Travel: \$5,760. Two trips per year from Arizona to a designated meeting site for 3 investigators to share data, methods, finalize manuscripts and grant writing.

**Evelyn F. McKnight Inter-Institute Bio-informatics Core  
University of Florida MBI Budget**

	Effort	Year 1	Year 2	TOTAL
<b>Personnel</b>				
Bioinformatician (to be named)	100%	\$80,000	\$0	\$80,000
Bioinformatician (to be named)	100%	\$0	\$80,000	\$80,000
Subtotal Personnel		\$80,000	\$80,000	\$160,000
<b>Fringe Benefits</b>				
Bioinformatician (to be named)	100%	\$24,000	\$0	\$24,000
Bioinformatician (to be named)	100%	\$0	\$24,000	\$24,000
Subtotal Fringe Benefits		\$24,000	\$24,000	\$48,000
<b>Subtotal (Personnel and Benefits)</b>		<b>\$104,000</b>	<b>\$104,000</b>	<b>\$208,000</b>
<b>Supplies</b>				
Animal Purchase (12 6-9mo; 12 20-22mo)		\$4,430	\$0	\$4,430
Animal Per Diem (24 x 60 days x \$0.78/day)		\$1,230	\$0	\$1,230
Reagents		\$10,000	\$10,000	\$20,000
Sequencing Supplies		\$20,000	\$26,160	\$46,160
Infrastructure (data storage, programs, updates)		\$6,500	\$6,000	\$12,500
<b>Subtotal Supplies</b>		<b>\$42,160</b>	<b>\$42,160</b>	<b>\$84,320</b>
<b>Travel</b>				
2 trips per year (2 people/2 night duration)				
<b>Subtotal Travel</b>		<b>\$3,840</b>	<b>\$3,840</b>	<b>\$7,680</b>
<b>TOTAL COSTS</b>		<b>\$150,000</b>	<b>\$150,000</b>	<b>\$300,000</b>

**Year 1**

- 1) Bioinformatician: \$104,000. Focus: data analysis (assemblies, mapping, annotation, data analysis) for all four MBI's. Office/lab space will be provided by the University of Florida.
- 2) Supplies: \$42,160. Includes animal costs, the reagents used for preparing the brain tissue, and sequencing costs. The infrastructure costs for cloud-hosting the data files and the data sharing will insure the rapid transfer of very large quantities of data between the Core and the participating investigators physically located at the various MBI's.
- 3) Travel: \$3,840. Two trips per year from Florida to a designated meeting site for 2 investigators to share data, methods, finalize manuscripts and grant writing.

**Year 2**

- 2) Bioinformation: \$104,000. (See year 1).
- 2) Supplies: \$26,160 reagents, sequencing costs and analysis platform upgrades. The increase in sequencing supplies is expected due to an expected increase in pilot projects from MBRF associated investigators. Some McKnight Investigators will need modest financial support to do the initial next-gen sequencing, in order to generate the actual epigenomics data that the Core will analyze for them. It is important to note that the bioinformatics analysis of the resulting data will be free (i.e. no-cost) as part of the routine operation of the Core.
- 3) Travel: \$5,760. Two trips per year from Florida to a designated meeting site for 2 investigators to share data, methods, finalize manuscripts and grant writing.