School for Global Animal Health

Agency Recommendation Summary:

WSU requests $6.4 million for the development of the new WSU School for Global Animal Health initiated with a founding capital gift by the Bill and Melinda Gates Foundation. The School, the only such institution in the nation, has the unique mission of discovering and developing novel solutions to infectious disease challenges through research, education, global outreach, and implementation at the animal-human interface. The requested funding will secure eight faculty positions, four of which will be key senior-level, internationally-recognized faculty, in the areas of disease surveillance, animal-human disease transmission, vaccine development, and global animal health policy. The School for Global Animal Health will advance science, people, and policy to discover new approaches for disease intervention and delivery of preventive health care for animals and humans.

Fiscal Details:

	2011-12		2012-13		2011-13
	FTE	Dollars	FTE	Dollars	Biennium
General Fund State	24.8	3,200,000	24.8	3,200,000	6,400,000
Total	**24.8**	**$ 3,200,000**	**24.8**	**$ 3,200,000**	**$ 6,400,000**

Package Description:

This proposal is at the forefront of the university's strategic plan led by President Elson Floyd to create research centers that are world-renowned and that bring jobs and other direct benefits to the state. Infections transmitted from animals to humans account for more than 70 percent of human infectious diseases, including emerging diseases like Avian influenza and West Nile Virus, and those existing diseases which are poorly controlled and not easily prevented such as *Salmonella* and *E. coli*.

The Washington State University College of Veterinary Medicine has developed an extraordinary amount of expertise in identifying, controlling, researching, and preventing diseases that are transmitted between animals and humans. This expertise includes the two most recent WSU faculty elected to the National Academy of Sciences, Drs. Guy Palmer and Terry McElwain, who provide leadership for the new School for Global Animal Health.

This $6.4 million biennial operating request seeks eight key scientific faculty positions in four clusters that will build a university program second to none in the nation. Closely aligned with the Department of Global Health at the University of Washington, the School for Global Animal Health will provide a unique and critical contribution that will make the state of Washington a leader in addressing global health issues at the animal-human interface, and that will give the state of Washington maximum capability to deal with emerging disease threats.

Matching the State's Investment

State investment in this proposal has already been matched by private and federal funding. Through a $25 million grant from the Bill and Melinda Gates Foundation, a new building

is under construction with critical modern global animal health research space on the campus of Washington State University which will serve as the centerpiece for the School. Private gifts have endowed a Chair in Global Animal Health and provided programmatic funding for discovery and development of new disease control measures. Increased state investment will catalyze additional non-state funding. A cogent example of this catalyzing effect is the development of a World Animal Health Organization (OIE) Collaborating Center in Laboratory Medicine at WSU in concert with the USDA. This would be the first OIE Center at WSU and would serve as an international center to leverage additional non-state funding.

The New Faculty
This request will provide funding for targeted recruitment of new faculty to strengthen existing expertise and to add new expertise not currently present within WSU, UW, or other private or public research institutions in the state. These individuals are essential for fulfilling the mission of the School, developing an internationally leading graduate program and strengthening existing inter-institutional linkages. The specific areas of expertise targeted for faculty clusters are detailed below.

- **Emerging Disease Surveillance** – provides unique new expertise in detection of emerging diseases at the global level that threaten human and/or animal health within the state, and focuses on development of novel testing procedures and screening methodology. This position is essential to the formation of the World Organization of Animal Health (OIE) Collaborating Center in Laboratory Medicine at WSU.
- **Zoonotic Disease Transmission** – provides new expertise in mapping routes of transmission of pathogens such as *E. coli*, from animals and their environment to humans, with emphasis on new strategies for blocking transmission. This faculty cluster will complement the existing strengths in zoonotic disease control at Washington State University.
- **Vaccine Development** – provides new expertise in developing vaccines targeted at animals with the goal of preventing ongoing transmission to humans. This faculty cluster will be linked inter-institutionally with the executive members of the Washington Vaccine Alliance (Fred Hutchison Cancer Research Center, Infectious Diseases Research Institute, Institute for Systems Biology, Pacific Northwest National Laboratory, PATH, Public Health-Seattle and King County, Seattle Biomedical Research Institute, Seattle Childrens' Hospital {GAPPS}; UW and WSU) and will provide the expertise underlying innovative approaches to vaccine development, specifically including the joint State of Washington-Queensland initiative for development of a vaccine to prevent livestock transmission of *E. coli* to humans.
- **Global Animal Health Policy and Metrics** – provides needed expertise in measuring intervention outcomes and formulating science-based policy to control international spread of animal and zoonotic diseases.

New faculty will be recruited as clusters composed of a senior scientist with an existing extramurally funded research program, a junior level faculty member, two research

technologists, and two post-DVM Graduate Research Assistant positions. This cluster approach provides both the depth and breadth within targeted areas (Zoonotic Disease Transmission, Vaccine Development, Emerging Disease Surveillance, and Global Animal Health Policy and Metrics), and is a key element in attracting internationally recognized scientists, providing an opportunity for new senior faculty to recruit personnel or bring existing associates with them. These new faculty will join existing faculty with extramurally funded programs (NIH, USDA, and the Wellcome Trust among others) in disease diagnosis and surveillance, epidemiology, economics and policy, and vaccine development. WSU scientists are internationally recognized for their work in food and water-borne diseases (e.g. *E. coli* and *Salmonella*), emerging disease surveillance (e.g. West Nile Virus and Influenza), vector-borne disease control (infections spread by insects), and vaccines.

Global Implications
WSU researchers are currently leading efforts to thwart disease outbreaks through surveillance and early detection, and are developing new strategies to reduce pathogen levels below the thresholds required for transmission. The School for Global Animal Health and its partners within the Washington Global Health Alliance will implement innovative and cost-effective approaches to reduce the impact of animal disease on human health and economic security. Examples of the effectiveness of this approach are the control of human rabies through animal vaccination and the virtual elimination within the U.S. of human tuberculosis caused by ingesting infected milk.

WSU scientists have a rich history in global animal health – starting in Kenya in the late 1970s to develop vaccines against tropical infections and now expanded to include disease surveillance and epidemiology. The outcomes extend far beyond animal health to directly impact the levels of economic development and security in the poorest countries. "Progress in education and health in the poorest countries relies upon animal health," according to Guy Palmer, who serves as Director of the WSU School for Global Animal Health. "The loss of even a single cow can result in premature termination of a child's education or the inability to purchase needed medicines," Palmer said.

Implications for Washington State
The School for Global Animal Health will extend the current leading role WSU plays in both disease surveillance and protection of the food supply. This will bring direct economic benefit to the state by attracting new federal and private research funding in global health. Economic impact analysis of global health in the state of Washington reveals the creation of nearly 14,000 direct jobs (mean annual wage of $55,937) and a 3.2 total job/direct job multiplier, resulting in greater than 43,000 total jobs. This employment generates greater than $4B in total business activity and total tax revenue to the state of $141M. The total business activity generated by global health research and teaching at WSU and UW exceeds $130M and has a total expenditure/state expenditure multiplier of approximately 4:1.

Additional benefits will be generated through protecting and expanding national and international markets for Washington agricultural products. Animal agriculture is a $1.5B

School for Global Animal Health

industry in Washington state. Our agricultural markets, including aquaculture production, are dependent on maintaining or verifying disease free status in animals or their live products. Early recognition of a disease which can shut off exports is vital to limiting the impact on agricultural markets, and surveillance is the key. As we have experienced with BSE, this can have a serious and prolonged impact on the economy.

The need for rapid surveillance of emerging disease is clearly illustrated by the $13B economic loss attributable to the 2001 Foot and Mouth disease outbreak in the U.K. Models based on this outbreak predict that each hour of delay in diagnosis will result in an additional $10M economic loss in livestock intensive areas.

The School for Global Animal Health will increase our capacity to identify, develop and implement innovative control solutions to both newly emergent pathogens and long-standing disease problems (e.g. *Salmonella* and *E. coli*) to meet the dual goals of protecting human health and our animal agriculture industry. Additional products such as vaccines for use in animals and novel diagnostic assays would provide a direct market return for the Washington State biotechnology industry.

A new graduate program designed to dynamically collaborate across institutional boundaries with the UW and health institutions across the state of Washington has been initiated using private foundation support. The graduate program in the School for Global Animal Health, which integrates laboratory and field studies with policy and is the first of its kind in the nation, will drive expansion of graduate education at WSU by attracting new competitive federal funding (NIH and USDA) and by continuing to attract international students fully supported by their home countries. Based on our current programs, we expect an increase of 4 doctoral students per new faculty with a 4:1 multiplier of total graduate students per state funded student. Importantly, these graduates will further enrich the human resource capabilities with the state through development of new methods to control diseases at the animal-human interface and by implementation of science-based policy.

While this request is centered on recruitment of the faculty expertise needed for the first phase of development, the School for Global Animal Health will seek federal and private funding as well to provide needed facilities, additional new junior faculty with unique expertise, and support for cross-institutional and global outreach.

Expected Outcomes for the State:
This budget request addresses two primary strategic Priorities of Government – "**Improving the Health of Washingtonians**" and "**Improving the Economic Vitality of Businesses and Individuals**". It is expected that full funding will:

- Enhance global health partnerships among Washington's premier state, federal and private institutions.
- Solidify the leadership of the State of Washington in global health through development of interdisciplinary and inter-institutional research and graduate education.

School for Global Animal Health

- Transform current strengths at Washington State University into preeminence in the control of infectious diseases at the animal-human interface by catalyzing new federal and private investment.
- Mitigate the impacts of infectious diseases such as avian flu, foodborne diseases and foot and mouth disease on animal and human health, the food supply and agricultural markets through development of novel methods of intervention at the animal-human interface.
- Improve global competitiveness of Washington State in the animal and human health sectors.

Calculations:

FISCAL DETAIL TABLES - SCHOOL FOR GLOBAL ANIMAL HEALTH					
	2011-12		2012-13		2011-13
By Program	**FTE**	**Dollars**	**FTE**	**Dollars**	**Biennium**
Instruction	6.1	728,000	6.1	728,000	$ 1,456,000
Research	18.1	2,184,000	18.1	2,184,000	4,368,000
Public Service	0.6	288,000	0.6	288,000	576,000
Total	**24.8**	**3,200,000**	**24.8**	**3,200,000**	**$ 6,400,000**
	2011-12		2012-13		2011-13
By Object	**FTE**	**Dollars**	**FTE**	**Dollars**	**Biennium**
Salaries					
Faculty	9.8	1,555,000	9.8	1,555,000	3,110,000
A/P	10.0	520,000	10.0	520,000	1,040,000
TA/GA	4.0	320,000	4.0	320,000	640,000
Classified	1.0	45,000	1.0	45,000	90,000
Benefits	-	702,000	-	702,000	1,404,000
Goods/Services	-	20,000	-	20,000	40,000
Travel	-	38,000	-	38,000	76,000
Equipment	-	-	-	-	-
Total	**24.8**	**3,200,000**	**24.8**	**3,200,000**	**$ 6,400,000**