



THE OHIO STATE UNIVERSITY



# "MEd-STEM: RESEARCH IN THE DISCIPLINES OF STEM"

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**Aligarh Muslim University, Aligarh, India**

**March 12-15, 2016**

**Support: USIEF, OSU, AMU**



**OBAMA-SINGH 21st CENTURY KNOWLEDGE INITIATIVE AWARD PROJECT (USIEF, 2013-2017):**

**”THE STEM-FACULTY PROJECT: TRAINING THE NEXT GENERATION OF STEM FACULTY AT HIGHER EDUCATIONAL INSTITUTIONS IN INDIA”**

# SCIENCE, TECHNOLOGY, ENGINEERING, MATHEMATICS (STEM) EDUCATION & RESEARCH (ER) PROJECT

- Enrollment Credits:

- Courses on Teaching 50%

- Postgraduate Research in STEM discipline 50%

- Selected AMU postgraduate students in the STEM disciplines:

- 1. Biochemistry: Asim Rizvi (Male)

- 2. Physics: Hala (Female)

- 3. Zoology: Malik Azeem (Male)

- 4. Biochemistry: Nida Rehmani (Female)

- Research by the 4 selected STEM ER Fellows at OSU

- Asim Rizvi: OSU Radiology, Advisor: Prof Qien Wang

- Hala: OSU Astronomy & NIST, Advisor: Prof S. Nahar

- Malik Azeem: OSU Molecular Genetics, Advisor: Prof Guramrit Singh

- Nida Rehmani: OSU Radiology, Advisor: Prof Altaf Wani

# STEM FACULTY TRAINING PROGRAM



- Developed a new curriculum for MEd-STEM - K. Irving, A. Rodgers, A.K. Pradhan, S.N. Nahar
- CAA approved the curriculum in December 2013

# OSU-AMU STEM ER CENTER



- Smart class-room for distant learning
- Extremely dedicated students. Fellows started classes in Summer 2014 through Distant e-learning. Problems:
  - Transmission delays in communications
  - Power outs due to rain and storm
- They started research immediately after joining OSU in August 2014

# AMU FELLOWS WITH OSU ADVISORS



- Completed first Phase I, June 2015: Education classes and research in their discipline with high proficiency
- Started Phase II at AMU, Summer 2015: Took field experience course by teaching, continued on research projects
- In process: Final presentations of STEM Research and Education projects



Research presentation at OSU:

”On the breast and lung cancers in rats and immunity development using vitamin D.”

One remark:

Recipient of Dr. Nurul Islam prize 2016 under Indian National Academy in Biomedicine

# OSU RESEARCH IN ASTRONOMY: HALA



Research presentation at OSU:

”Calculation of collision strength for electron impact excitation using relativistic Breit-Pauli R-matrix (BPRM) method for Si IX”

”Spectral and structural studies of low charged ions of Selenium (Se II-Se V) with the help of semiempirical quasi-relativistic Hartree-Fock calculations using Cowan computer package”

”High-resolution Fourier transform spectrometry” in collaboration with Dr. G. Nave of National Institute of Standard and Technology, Maryland-US

One remark (by Sultana Nahar):

**Achieved the most in research: i) study of plasma diagnostics and electron-impact collision, ii) Measurements of lines at NIST**

# OSU RESEARCH IN MOLECULAR GENETICS: MALIK AZEEM



Research presentation at OSU:

”Study of RNA protein complexes responsible for modulating the expression of genes”

**One Remark (by OSU Advisor Guramrit Singh):**

**Malik Azeem is the STAR of the STEM ER Program**

# OSU RESEARCH IN ASTRONOMY: NIDA REHMANI



Research presentation at OSU:

”Copper dependent enhancement of DNA damage and X-ray induction by L-DOPA and Dopamine: Putative neurotoxic mechanism”

One Remark by OSU Advisor Altaf Wani:

**Stuborn little thing, has spoiled resources but has learnt a lot**

# STATUS OF THE FOUR FELLOWS



- With OSU President Michael Drake
- Final Semester of the MED-STEM degree program - Spring 2016:
- Will submit written reports, Research at OSU will be part of Ph.D. thesis
- Evaluation completion due by April 15, 2016
- OSU GRADUATION, MAY 2016



## SELECTING INDO-US STEM RESEARCH FELLOWS AT OSU, FALL 2016 (August - December)

- For fully supported four Indo-US Research Fellows, 2 male and 2 female senior postgraduate students
- For research in STEM disciplines
- Advanced in research at AMU for immediate pick-up of the research project at OSU
- Completion of research at OSU to be part or chapter of the thesis
- Prospect of continuation of collaboration with OSU
- **SELECTION CRITERIA**
- Postgraduate students with completed course work by March 2016
- English communication skill
- Overlap matching of research with the OSU advisor
- Interview with OSU team for the first screening
- Skype interview with the prospective advisors