



# Education and Outreach (Cross Cutting Thrust)

*MTV Kickoff Meeting*

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# Introduction and Motivation

- The MTV universities and national laboratories will train the next generation of students and postdoctoral researchers in nuclear nonproliferation and safeguards
  - Engage the students in multi-institution research and development projects
  - Develop new courses and update existing ones
  - Organize short targeted visits and long-term internships at the national labs, and organize workshops and conferences
- Undergraduate and graduate students and postdoctoral researchers will be key contributors to the research project success within the MTV
- We will enable their recruitment and research work by establishing and administering research fellowships



# MTV Research Fellowships

## Undergraduate student fellowships

- Research fellowships at the junior and senior level to develop a pipeline in support of the NNSA mission

## Graduate student fellowships

- Research fellowships for graduate students that include internships at one of our partner national labs
- Fellowships in Applied Antineutrino Physics

## Postdoctoral researcher fellowships

- Postdoctoral fellows will have leading role in research and publications, as well as mentoring MTV students

## Student-faculty national lab rotations

- Research rotations (approx. 6-8 weeks) working side-by-side with national lab scientists



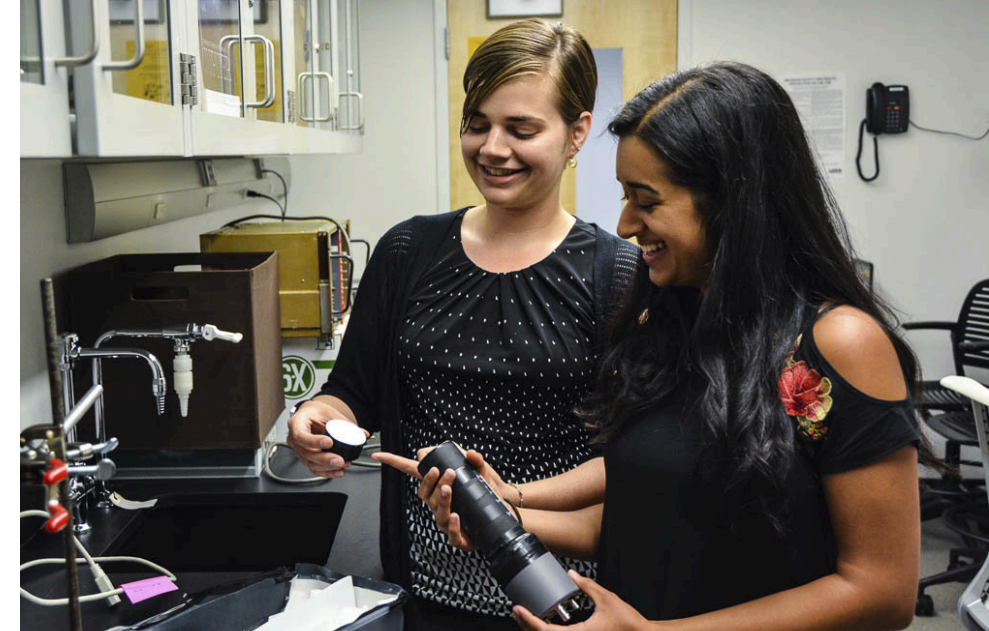
# MTV Career Development

## Fellows and associates career development

- Supported to present research at conferences and workshops
- Encouraged and supervised in writing peer-reviewed research papers are lead authors

## Fellows and associates transition to national laboratory

- Establish research projects in collaboration with national labs will ensure that MTV graduates are fully trained and ready to transition



# Academic Course Development

- Academic courses will developed and enhanced across MTV partner institutions
- The UM NERS 532 course UM includes a one-week practicum at Oak Ridge National Laboratory's Safeguards Laboratory
  - Hands-on testing, evaluation, and validation of radiation measurement equipment, as well as training for integrated safeguards methods
- UNM will develop new graduate-level course material and potentially a Certificate Program in Nuclear Safeguards and Nonproliferation
- Workshops and summer schools will be organized to train students in specific expertise (radiation detection, MCNP, etc.)



*2017 NERS 590 class trip to ORNL*

# MTV Outreach to the General Public



- The MTV will disseminate information on the peaceful uses of nuclear science and technology and the fundamental issues in nuclear nonproliferation
- Early exposure to nuclear science and engineering education
  - Elementary, Junior High, and High School students
  - Presentations at other non-MTV colleges and universities
- Public exposure
  - Peer reviewed journal publications
  - Radiation Weather Station
  - Research presentations at scientific conferences
  - MTV Website and social media presence



# Other Outreach Activities

- Do-It-Yourself Geiger Muller (DIYgm)
  - A simple-to-assemble radiation detector with a computer (Raspberry Pi) will be prepared as a kit, suitable for assembly by a high school student or member of the general public
- Undergraduate Research Laboratory (UM)
  - Accepts students from all majors at all levels within UM, accomplishing tasks relating to NNSA mission using these students organized in teams
- Local college outreach
  - Tours and basic exercises associated with radiation detection
- High school visits
  - Send students to local high schools to give lectures on nuclear technology



# Expected Impact

## Education and Training

- Next generation of nuclear scientists and engineers for nuclear nonproliferation
- Support to the NNSA mission with a pipeline of uniquely trained students

## Outreach

- Educate the public on nuclear science and technology
- Dispel common myths associated with nuclear technology radiation safety





# Conclusion

- New and enhanced academic courses developed under the MTV will enable training of uniquely qualified students with knowledge and expertise in the NNSA mission
- Local programs will be leveraged and enhanced to engage elementary, middle-, and high-school students
- Outreach activities of the MTV will enable our faculty and students to engage the general public on issues related to nuclear security



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