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Three Needs in Education for the Responsible Conduct of Research (RCR)

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The Three Needs in RCR Education

- 1. The involvement of research supervisors in the education of trainees*
- 2. Development and articulation of field-specific norms and practices – which requires the involvement of those supervisors*
- 3. Development and formulation of norms for research in engineering fields – which are quite different research environments from those in the natural science and especially from biomedicine which has been the first focus of education efforts in RCR.*

1. Need the involvement of research supervisors, because

- λ Trainees internalize what they see (or think they see) in their own labs*
- λ If that experience does not fit what the trainees learn in RCR courses and workshops , the latter are ignored*
- λ Supervisors may need to be brought up-to-date on norms for RCR that the trainees are learning.*
- λ Only experienced supervisors can develop **field-specific** norms of research conduct, since it is they who can best think through ethically significant situations in their fields.*

Research supervisors:

- λ Are occupied with multiple responsibilities: for research integrity, the education of their trainees, advance of the field, to collaborators, their institutions, funders of their research,*
- λ Rarely are articulate about the norms of responsibility they practice, however good their practice is*
- λ Typically pride themselves on performing at a high level and so are reluctant to take on a task of RCR educator as a beginner*
- λ Typically have experience that helps them solve ethically significant practical problems in research*

One Method for Involving Supervisors developed with NIH/HHS funding

- λ *Modules on ten RCR topics described in detail at <http://www.onlineethics.org/cms/13008.aspx>.*
- λ *Each module session takes about 1.5 hours of time.*
- λ *A week ahead email to all trainees and their supervisors*
 - λ *Descriptions of problem situations on the topic (e.g., authorship) that are tailored to the participants' field from which participants will be asked to choose those to be discussed (or suggest new ones).*
 - λ *The names of respected panelists: several supervisors & a trainee.*
- λ *At the session,*
 - λ *Briefly summarize relevant basic norms & guidelines*
 - λ *Discuss the chosen situations in a problem-solving mode*

2. Development of field-specific norms

- λ *Conditions of research vary from one field to another, e.g.,*
 - λ *Form of data and hence how it can be shared by collaborators*
 - λ *The markers that signify the phenomena investigated*
 - λ *The statistical methods that are appropriate to the data*
 - λ *Whether the creation of some necessary research materials for an experiment constitutes a major research contribution*
 - λ *Whether the research contribution of technicians are commonly so significant as to qualify them for authorship*
- λ *Those in the field are best qualified to develop the guidelines and practices that reflect those differences*

3. Formulation of norms for research in engineering fields

- λ The absence of participation by experienced engineering investigators in formulation of guidelines appropriate to their field has an effect here, too*
- λ RCR conversation has been dominated by standards for the biomedical fields*
- λ Engineering is different e.g., labs, author responsibilities, norms for republication*
- λ Even where engineering standards have been developed they are generally neither well known nor readily accessible – e.g., in sections of the IEEE PSPB Operations Manual, see http://www.ieee.org/portal/cms_docs_iportals/iportals/publications/PSPB/opsmanual.pdf*

Thank you for your attention

