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Recent advances in the domains ("cells and tissues, to joints, limbs, and even whole body movements") highlighted in the conference description include many studies which utilize computational techniques. The acceptance and usefulness of computational simulations will continue to advance and it is important for the community to evolve and the NIH to establish guidelines as these methods are adopted.

One risk associated with the apparent ease of model development, as opposed to the obvious costs associated with experimental work, is the potential for adoption of poor modeling techniques and/or thorough validation. Especially with regards to biomechanical studies, where many applications include the possibility of comparing computational results with experimental or clinical data, it is important to validate model performance appropriately. In order to address this my **first recommendation** is for the formation of computational model validation and sensitivity guidelines for each of the modeling domains. This effort would doubly, help the establish a basis for model efficacy and serve as a guideline for appropriateness of publication. Further, these guidelines would also provide a reference during model development and facilitate adoption of common language within the research community. The varied quality of simulations has become apparent to myself through manuscript reviews and literature searches. Many studies, while incorporating exciting features, fail to address the fundamental question of model validation before trying to address clinical issues. As a new investigator I can relate to the potential confusion surrounding acceptable approaches for model validation. Establishing these guidelines would help streamline efforts and maintain a high level of quality in the literature. For example, it might be agreed upon that for a model to address soft-tissue stress predictions, it should first be shown to accurately predict the strain of the tissue of interest during a controlled experimental setup.

As multi-domain and multi-scale computational approaches also become more popular, it is also important to establish the basis for translation between the domains or scales. Thus, my **second recommendation** is to establish guidelines addressing the development of multi-domain and multi-scale mechanically consistent models. If loading from one domain is translated to another, it is important the coupling is appropriate. For example, knee mechanics and changes to the associated tissue restraint have the potential to affect muscle forces during a given activity (imagine a hinge versus the behavior of an actual knee). If knee mechanics are of interest, it is important to appropriately represent the knee restraint and motion during dynamic computational force prediction. Depending on the implementation, this example could be either multi-domain and/or multi-scale. From an obvious multi-scale perspective, predicting soft-tissue cellular response as a result of structural level loading is another example. Mechanical consistency in this case asks the question, does the local strain predicted by the macro model (tissue level in this case) provide appropriate boundary conditions and cellular response for the micro model (cellular level in this case)? Clinically viable multi-scale approaches are a relatively new area of research and establishing these guidelines would help overcome potential pitfalls as well as strengthen translational research.

My third and largely self-serving recommendation comes from my perspective as a new investigator. I am motivated by recent initiatives to fund young and/or new investigators. From sliding percentile ranges for some grants to specific funding mechanisms (K99 for example), I feel that this is a trend which should continue. It is my **third recommendation** to explore potential funding mechanisms geared specifically toward new investigators with biomechanical interests.