Orthopaedic research nowadays often involves interdisciplinary teams, where success depends on effective collaboration between surgeons and laboratory-based Ph.D.s. These two types of investigators inhabit somewhat different professional cultures. In order for orthopaedic surgeons to be productive and effective in their laboratory research endeavors, it is important to be cognizant that their Ph.D. colleagues not only have very different skill sets, but indeed often approach a given research problem with different scientific considerations. Most orthopaedic surgeons conducting laboratory research are motivated primarily to get answers that can be put to use in taking better care of patients. Most Ph.D. investigators typically have a strong component of loyalty toward strengthening the scientific information base in their area of specialization. These two goals are neither contradictory nor mutually exclusive, but they are different.

This two-part presentation begins with a synopsis of “pointers” for effective collaborative partnerships between orthopaedic surgeons and laboratory researchers, developed several years ago as part of the OREF/AAOS grant-writing workshop. The essence is that winning enthusiastic researcher support for the surgeon’s goals is necessarily a two-way street, in that the surgeon also needs to reciprocally support the researchers’ goals. Surgeons need to demonstrate a sincere commitment to understanding the key technical/scientific hurdles dominating the collection and analysis of meaningful data for the study in question. And they need to be patient and encouraging throughout the often-frustrating process of getting complex experiments and/or models to execute successfully. Ph.D. researchers normally do not expect surgeons to have the specialty expertise to solve intricate methodological problems in laboratory settings. But they need to be able to count on surgeons’ understanding of WHY such problems need to be dealt with, and they need to feel that their surgeon collaborators are committed to bearing with them through that process.

The second part of the presentation is a “case study” of this process, involving a collaboration between two orthopaedic surgeons, three Ph.D. engineers, and one M.D., Ph.D. surgeon-biomechanist, in a recently published study of a new focal resurfacing implant for the ankle (Anderson et al., JBJS 92: 1490-1500, 2010). The study’s motivation had been to explore considerations specific to talar dome focal resurfacing, against the backdrop of encouraging early experience with focal resurfacing in the knee. The investigative group identified a mutually interesting set of issues that were of meaningful in terms of clinical application of this type of implant, and that involved scientifically robust challenges in terms of computational modeling and experimental measurement of implant biomechanical performance. The surgeon team members provided steadfast enthusiasm and cooperation during the lengthy period of biomechanical model development, after which point the laboratory investigators were positioned and motivated for extensive sets of model runs to address clinically pragmatic questions.