I. Background reading for project

Some good sources for general information regarding this project would be reading a cell biology book on the subjects of cell adhesions (with an emphasis on focal contacts/adhesions), the cytoskeleton, and tyrosine kinases (especially the focal adhesion kinase, and related kinases such as Src, PYK2, etc.). The book Molecular Biology of the Cell should be available in lab (Chapter 19, etc.)

II. Papers: (attached)

The focal Adhesion Kinase_Schaller MD_96.pdf
FAK the first ten years_Parsons JT_2007.pdf
These are both good (albeit somewhat old) reviews of the protein focal adhesion kinase.

Reconciling the roles of FAK in osteoblast differentiation, osteoclast remodeling, and bone regeneration_Kim J.-B,. et al._2007
The primary author of the paper, Jae-Beom Kim, helped develop this project. This paper describes the origins of the FAK -/- cells used in this project (see Fig. 1 of this paper). I believe the cells we are currently using were only derived from calvariae (Fig. 1 C) and not from bone marrow (Fig. 1 D). I am not certain if the FAK -/-; +/+ clones that you will be using during this project (1DF, 1E6, 1D5, etc.) are capable of differentiation (as indicated by Fig 1 C – check the project grant for more information on these cells). It should also be noted that these cells still express the c-terminal FRNK fragment (Fig. 3, read about FRNK in review papers above).

Signaling through focal adhesion kinase_Schlaepfer D.D., et al_1999
This paper is a more thorough review of FAK signaling. Of particular interest may be section 5 of this paper. For example Fig. 10 shows how FAK-/- fibroblasts re-expressing wtFAK regain the normal fibroblast morphology (similar to the project you will be working on). Also note that the primary author of this paper, David D. Schlaepfer, donated (?) the expression plasmids containing the FAK constructs (wtFAK, FAK Y397F, and FAK Y925F).

Mechanical Strain on Osteoblasts Activates Autophosphorylation of Focal Adhesion Kinase and Proline-rich Tyrosine Kinase 2 Tyrosine Sites Involved in ERK Activation_Boutahar N, et al., 2004
Although this paper has some flaws, it has some similarities to the project you will be working on. Not necessary reading, but interesting.

III. Other

It will also help to review the grant for this project (emphasis on Specific Aim 3 and SubAim 3A pg. 53-54).