REGULATION OF COLLAGENOLYTIC ACTIVITY. Jerome Gross
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Morphogenetic processes involve well regulated synchronization of biosynthesis, secretion, organization, and removal of structural macromolecules. Because we know so much about collagen and its obvious involvement in tissue organization, development and repair, it provides a useful handle for examination of tissue development.

On the degradative side of collagen metabolism the animal collagenases play a key role. The evidence is strong for hormonal regulation and also for control via activation of precursor forms or some model of reversible inhibition. Inactive forms of the enzyme have been extracted from some tissues and also obtained from cell cultures where they appear to be exclusively in the inactive state. Activation may be accomplished by reaction with proteases such as trypsin or plasmin and by certain chemical agents. A variety of chemical and biological factors are now known to turn on or increase collagenase production by macrophages and connective tissue cells. Among the more interesting are substances secreted by lymphocytes which stimulate collagenase production by macrophages, rheumatoid synovial cells and stromal cells of the adult rabbit cornea. We now have evidence for interaction between epithelial and stromal cells of the cornea in the production of collagenase, mediated by factors secreted into the culture medium and possibly also by direct cell contact. Questions relating to biochemical and cellular regulation of collagen degradation will be discussed.