

Pursuing the smaller

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INTRODUCTION: Background and origins.

Pursuit of different landscapes at different scales to discover the routes to explain how the body is built. A fortunate period during which techniques and concepts for investigating structure have improved year by year. My fortunate encounter with Michael Abercrombie and his views on the social behaviour of cells, aims for quantitation, and statistical testing. Kruyt and Vasicek's books. Varied environments – Geology, Biophysics Ph.D. in a Genetics Department, Anatomy via Zoology to Cell Biology. Immediate involvement in cell adhesion. Cell movement and cell trapping. Reaggregation phenomena, Eric Lucey and time-lapse filming An early start from the physico-chemical viewpoint. Contact inhibition of movement.

METHODS: Cell culture, Quantitative measurements of cell adhesion. Kinetics. IRM and related optical interference techniques. Micro- and nanofabrication. AFM
Polscope and photoelastic measurements.

RESULTS: Mapping the adhesion. Trying to get answers to three problems, how close do cells get? Early data from IRM and then TIRF and then FReenergy. And the time scale – very short indeed in suspension. Differences from data re cell adhesion molecule. DLVO theory. How strong? Why it rains. Contrast with cell adhesion molecule studies. Problems with cell adhesion molecules.

Contact guidance and Paul Weiss; explanation. Tests with grating replicas. An area waiting for microfabrication. Force explanations, influence of Albert Harris. Nature paper with ~Mustafa Seehar. Taking microfabrication results what is best explanation. Tissue engineering 'tendon Protein adsorption explanation defects. Recent photoelastic measurements. Polscope.

Onto nanostructures. Looking at dimensions and sensing of this Why order may be important. Collagen. How small a feature. Fortunate association with the engineers. A newish problem. Liquid crystals help, Self-assembly/

DISCUSSION & CONCLUSIONS:

The results will be discussed in terms of very recent theories of cell interaction and cell signals.

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