

The *Mount Everest High Altitude Research Expedition* had three main scientific objectives.

- 1) We were interested in whether the amino acid leucine (usually consumed as a component of dietary proteins), can be given as a supplement so as to permit mountaineers at high altitude - who normally do not eat enough to maintain body weight – to retain lean body mass to a greater degree than those who do not take leucine supplements. It is known from recent weight loss studies that leucine supplementation seems to help subjects - who have food experimentally withheld - maintain their lean body mass (i.e., muscle) to a greater degree than those not receiving the supplementation. Animal studies have shown that leucine slows the degradation of muscle tissue by increasing the synthesis of muscle proteins. We know that loss of muscle mass is typical of climbers living and working at high altitude.
- 2) It is well known that healthy low altitude-dwelling humans have a measureable increase in red blood cells (i.e., polycythemia) when exposed to high altitude for a week or more – ostensibly to increase oxygen delivery to body tissues. What is little understood, however, is why there seems to be active destruction of blood cells (vs. just reduced red blood cell production) when returning from a high altitude environment to an environment closer to sea level. Blood was drawn after return to basecamp subsequent to the summit being reached, and then again in Kathmandu (13,000 ft lower than basecamp). Findings may shed light on why some otherwise healthy people have chronic problems with anemia (a condition in which the body does not have enough healthy red blood cells).
- 3) Barometric pressure has been measured at various altitudes on Everest, up to and including the summit. However, no one has ever made continuous pressure readings from basecamp to the summit of the mountain. We accomplished this “running measurement” up and down the peak, and in addition, deployed continuously recording atmospheric pressure sensors at basecamp, advanced basecamp, and the North Col throughout the course of the expedition. This gave us the unique ability to simultaneously record continuous information on barometric pressures at various altitudes on the mountain.