Natural Selection would favour the lactase persistence gene under UV conditions.

Further exceptions – lactase persistence

African pastoralists

- Milk is an important source of calories
- Metabolise lactose – caloric advantage

Eskimos and Lapps

- Eskimos have a very vitamin D prevalent diet
- Lapps – some have used reindeer herds in this way but they are another anomaly because we would not expect to see this mutation
- Eskimo and Lapps have a low calcium intake, making their calcium homeostasis very poor.

Summary

- Skin colour variations – melanisation – biological adaptations to environmental stressors
- Melanised skins protect against harmful effects of UV radiation and resultant cancers - X
- Folate hypothesis – melanin protects against folate depletion
- Vitamin D hypothesis – lighter skins in northern latitudes reflect selection for reduced UV radiation conditions
- Lactase persistence and calcium metabolism

Living at altitude

Population responses to living at altitude

- <1% of the world's population or approximately 25 million people
- High altitude 2,500m or approximately 8200 ft.
- Himalayas, Rocky Mountains, Andes, Ethiopian Highlands
- Permanent settlements – above 15,000ft (Tibet) and around 17,000ft (Andes)

Adaptation, Acclimatisation and Accommodation

- Adaptation – organism has acquired a beneficial adjustment to the environment. This can be biological (genetic usually) or cultural
- Acclimatisation – changes that occur during an individual's lifetime to reduce the strain caused by stressful environmental conditions. Changes are reversible