* The 20S Proteasome
  + Quaternary structure of enzymes put together
  + 20S because sediment at certain rate?
  + Peptidase – recognises and cleaves peptide bond
  + Only degrade protein the the tag Ubiquitin
* Ubiquitin
  + Target proteins to be degraded by proteasome
  + Attach lysine of the protein through lipopeptide bond
  + Need ubiquitin ligase
  + Highly regulated in the cell
* Non-lysosomal protein
  + Compartmentalisation is an important factor
  + Major way cell signals is through compartmentalisation
  + Break down those not in the lysosome
  + Cells signal through compartmentalisation
  + The ones that are not in the lysosome need to be tagged
  + As long as they are in the lysosome, they are isolated
  + A condemned protein when ubiquitin attached – then become degraded
  + Require 4 tandem UQs – 1 not enough to condemn and degrade proteins
  + Not a random process
  + Targeted proteins get recycled in the lysosome
* Amino acid deamination
  + Aa generally – nitrogen gets secreted to urea – urea cycle
  + Carbon skeleton is recycled – glucose, ketone bodies, CO2,…
  + Free aa comes from… - in the gut – some other sources from degradation of protein
  + Breakdown aa get alpha-keto acid and ammonia – these 2 separate
  + Alpha-keto acid goes into the Krebs cycle
  + Ammonia, amide, nitrogen group – excreted, removed, transferred
  + Transamination interconverts
  + Glutamate transfers ammonia to kidney
* PLP – vitamin B6
  + Important cofactor
  + Charges – phosphate group – and CHO – gives it the ability to assist enzyme to break bonds and transfer nitrogen
* Transamination
  + Transfer NH3+ to alpha-keto acid to make alpha-amino acid
  + Equilibrium reaction
  + Need PLP
  + Not regulated cuz Keq = 1
* Degradation of aa
  + Alanine to glutamate
  + Aminotransferase
  + Get rid of excess aa – need to go to glutamate – glutamate dehydrogenase makes NH4+
  + In animals, glutamate dehydrogenase is UQ -