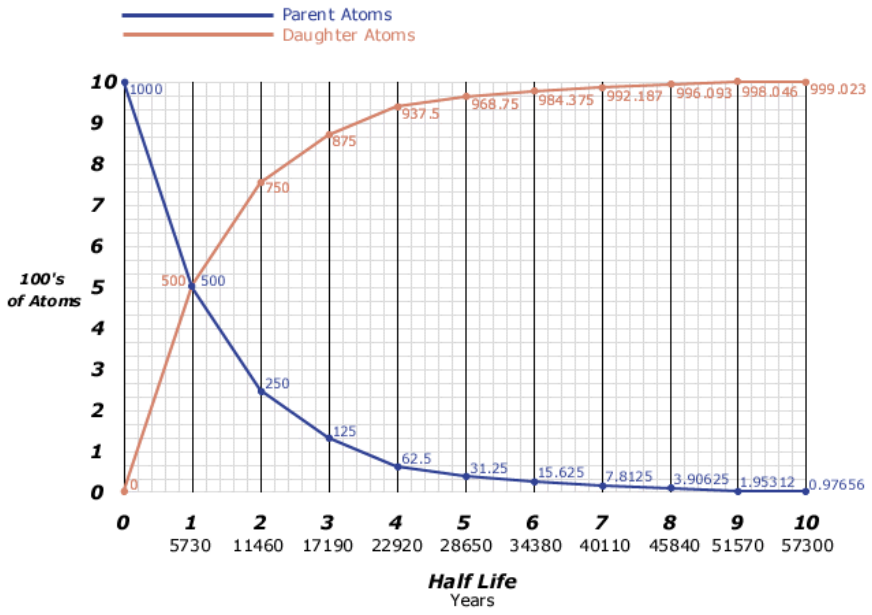
Method for determining absolute age

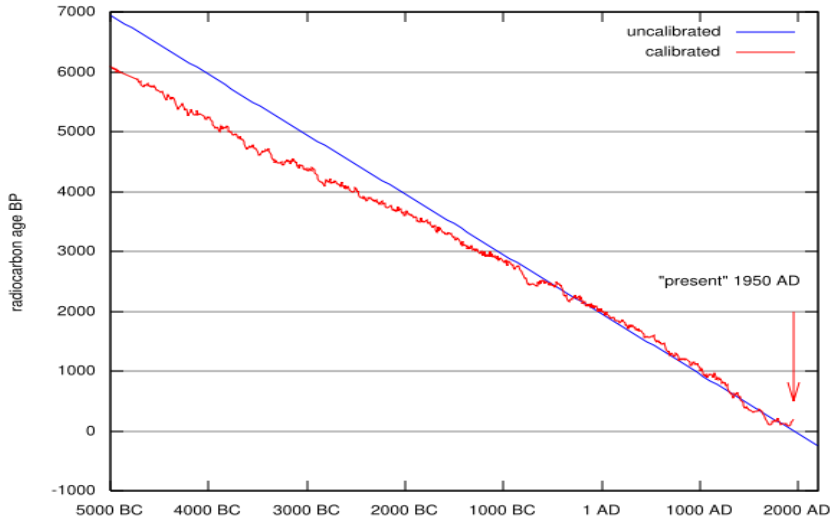
- **Ratio-metric dating**
  - **Comparing abundance of parent isotopes to daughter isotopes**



Eric B.

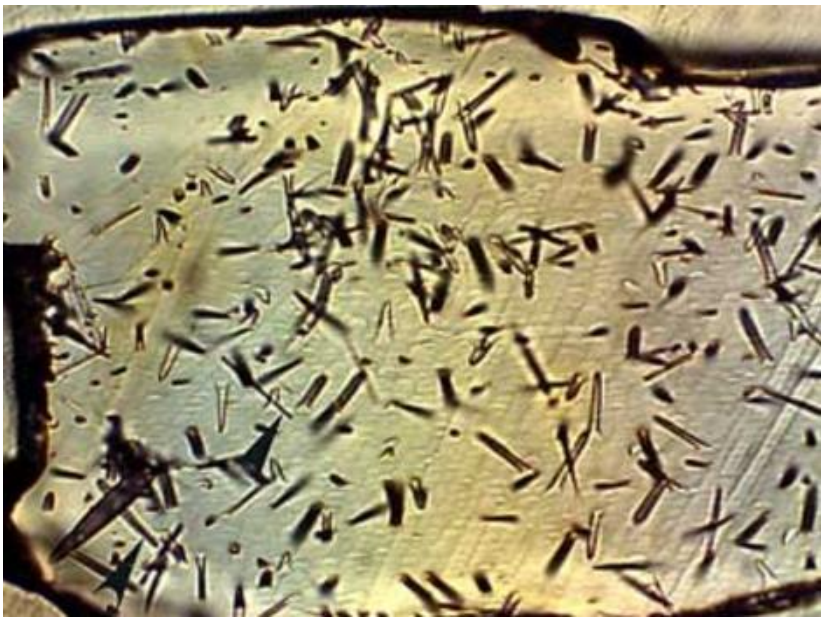
http://facstaff.gpc.edu/~pgore/myart/radiometric.gif

- **Radiocarbon dating**
  - **Starts at death (exponential decay starts at death)**
  - **Assuming a constant start point**
  - **At about 3000 year, data deviates towards younger years**
  - **Above ground nuclear devices spike the amount of carbon in the environment**



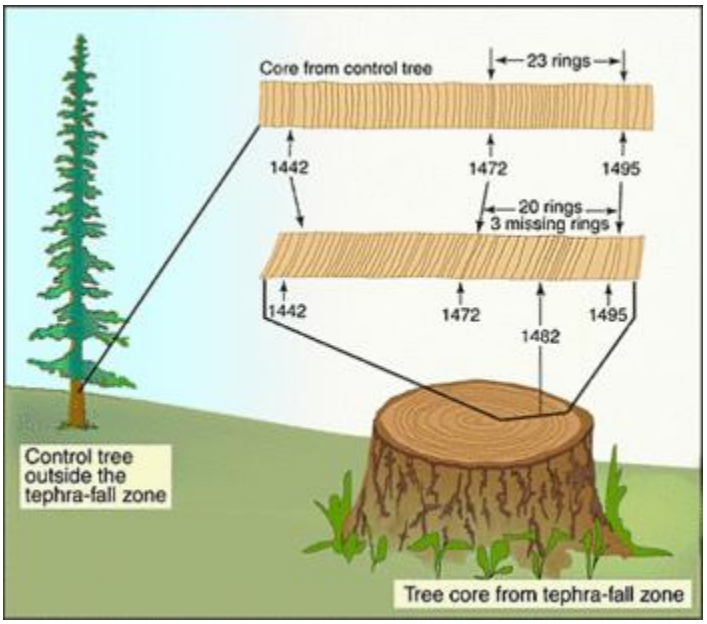
http://upload.wikimedia.org/wikipedia/commons/thumb/b/b0/Radiocarbon_dating_calibration.svg/600px-Radiocarbon_dating_calibration.svg.png

- **Fission track dating**
  - **The track that occur when atoms split**
  - **Use acid to enlarge the tracks**
  - **Count tracks per area to get date**
    - **Come minerals decay faster than other**



http://www.detectingdesign.com/images/RadiometricDating/FissionTracks.jpg

- **Dendrochronology (tree ring dating)**
  - **Only good for one climate area**
  - **Need to start with known date**



http://creationwiki.org/pool/images/thumb/8/8c/Dendrochronology.gif/350px-Dendrochronology.gif

- **Lichenology**
  - **Lichen: first organism to colonize bare rock**
  - **Can be used to date length of time since lichen began to grow**
  - **Measured by diameter of lichen**
    - **Problems with growth rate**
      - **Different species grow at different rates**
      - **Environment affects growth of lichens**

http://lichenology.info/doc/illustrations/intro_AREN59.jpg

- **Varve Chronology**
  - **Varve: annual layers in sediment in glacier lakes**
    - **Coarse → Fine**
    - **Light → Dark**

http://creationwiki.org/pool/images/thumb/0/02/Varve_chronology.jpg/150px-Varve_chronology.jpg

- **Anything with annual layering (Ice cores, Corals, Speleothems)**
    - **Start at known date and work backwards**
        - **Speleothems:**
            - **Form by precipitation**
            - **Bandwith of layers gives the climate of the environment**

http://wpcontent.answers.com/wikipedia/en/thumb/a/a1/Labeled_speleothems.jpg/350px-Labeled_speleothems.jpg

        - **Corals**
            - **Bands are separated by light →dark rings, one set per year, summer and winter**

http://serc.carleton.edu/images/eslabs/corals/coral_bands_xray.jpg

        - **Ice cores**
            - **Temperature determined from O_{18} … the more O_{18} the warmer it is**

http://www.sitnews.us/0708news/071608/071608_icecore.jpg