Perspectives on the Journey from Wisconsin to UCLA

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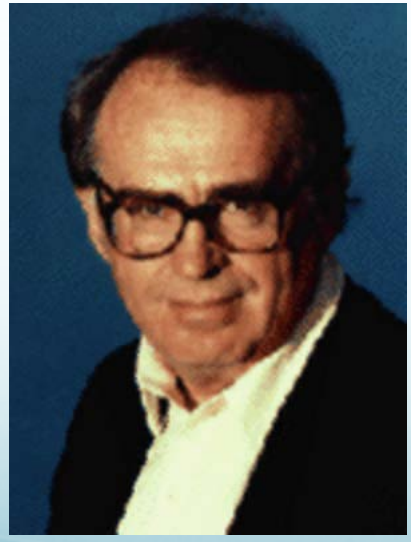
In the beginning

- I met David Cline in 1983, when he taught a class in accelerators at UW-Madison.
- This was an exciting time, the discovery of W and Z particles…



The company we kept

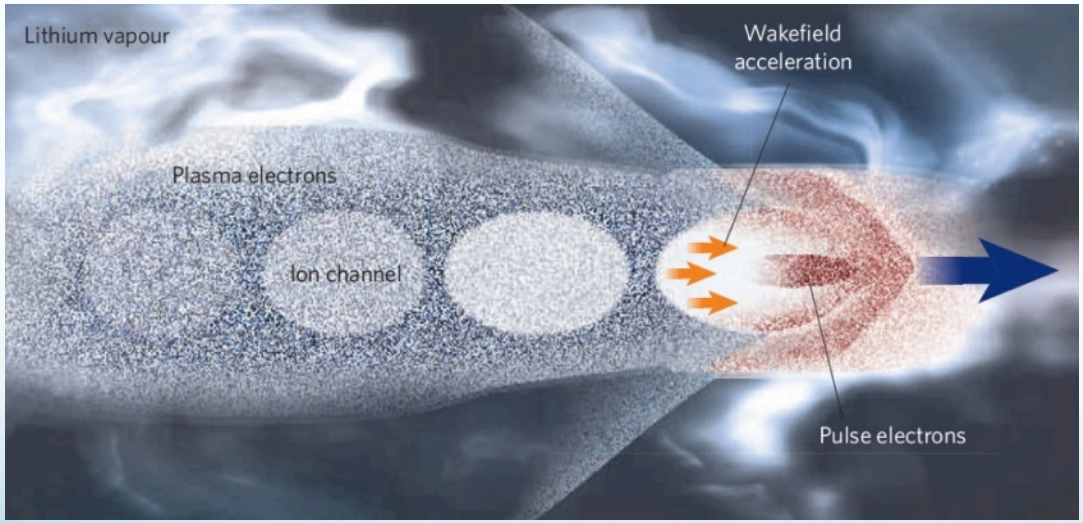
- A young scientist could connect with the core of many emerging fields through Dave
- Teachers turned into collaborators

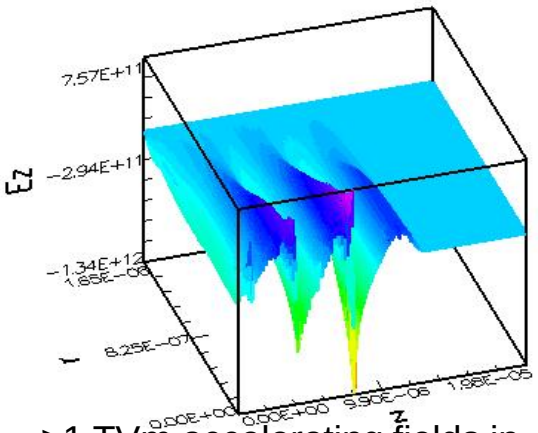
Fred Mills

Sandro Ruggiero

The revolution we fomented

- Shrink the energy frontier collider from 10's of km size to 10's of m
- Plasma wakefield acceleration (PWFA)…



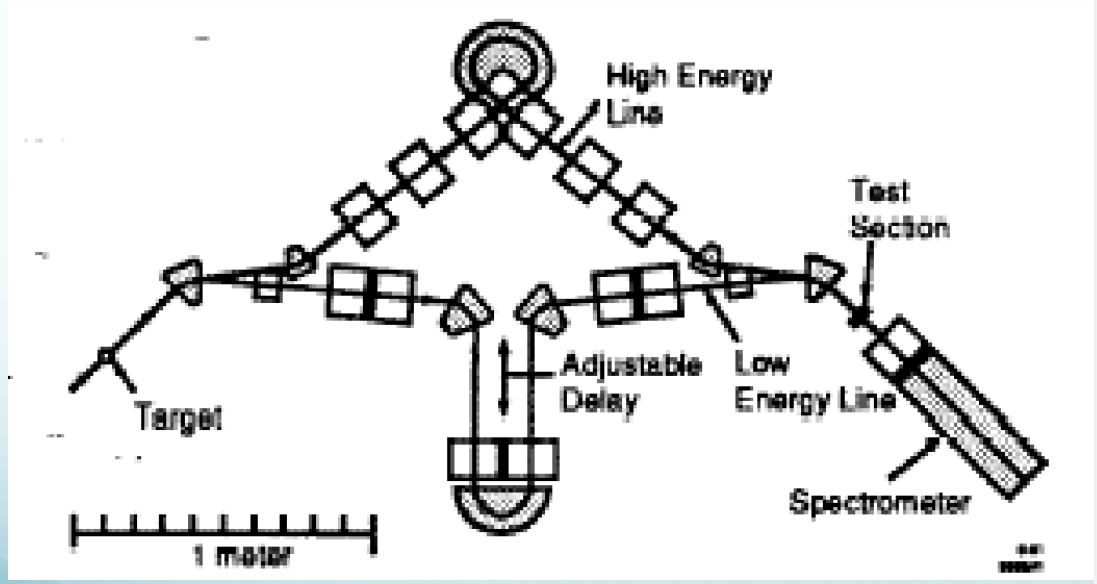


>1 TVm accelerating fields in UCLA FACET II PWFA experiment

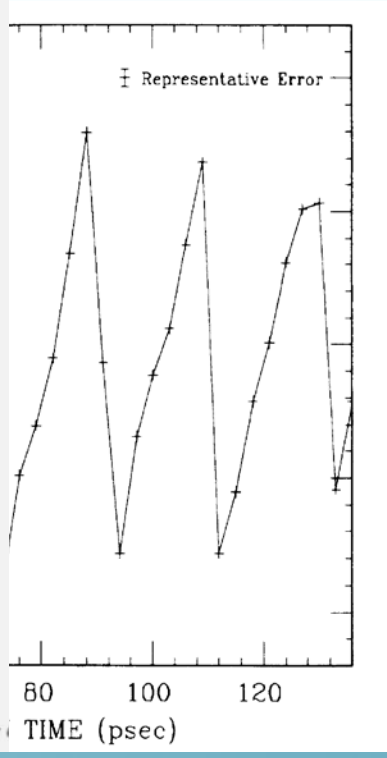
I decided to work on this instead of going to medical school.

Groundbreaking experiments at ANL

- Proof-of-principle experiments at ANL AATF
- A grad students dream playground



NOT Jim Simpson

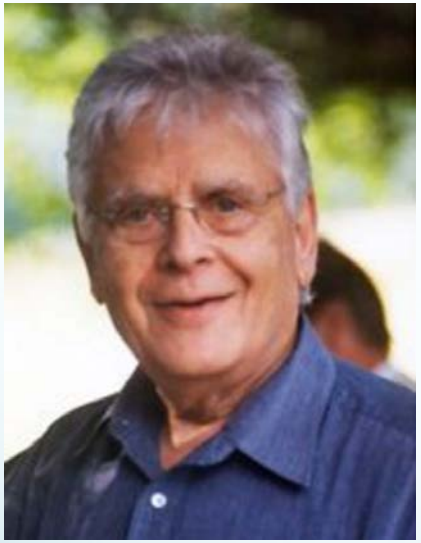


Heading West

- While I was occupied with the PWFA, Dave had manifest destiny on his mind
- UCLA plan, in short:
  - CERN collider experiments (Higgs, etc.)
  - Astoparticles and dark matter
  - Advanced Accelerators
  - Post-script: missions all accomplished
- First invitation to join refused, I had an opportunity as Wilson Fellow at Fermilab

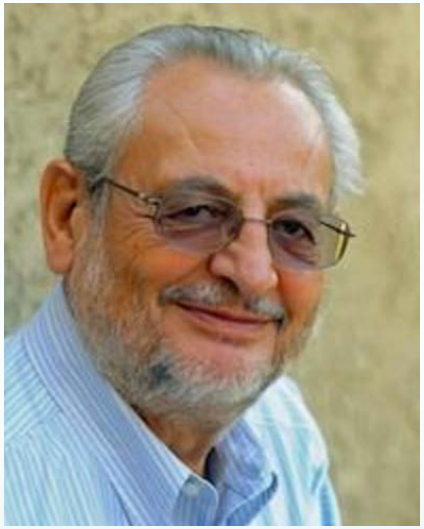
Common UCLA Lineage

- Cline was my UW “father”, but my UCLA “grandfather”
- Jim Kolonko was “favorite uncle”



Peter Schlein

Dave Cline



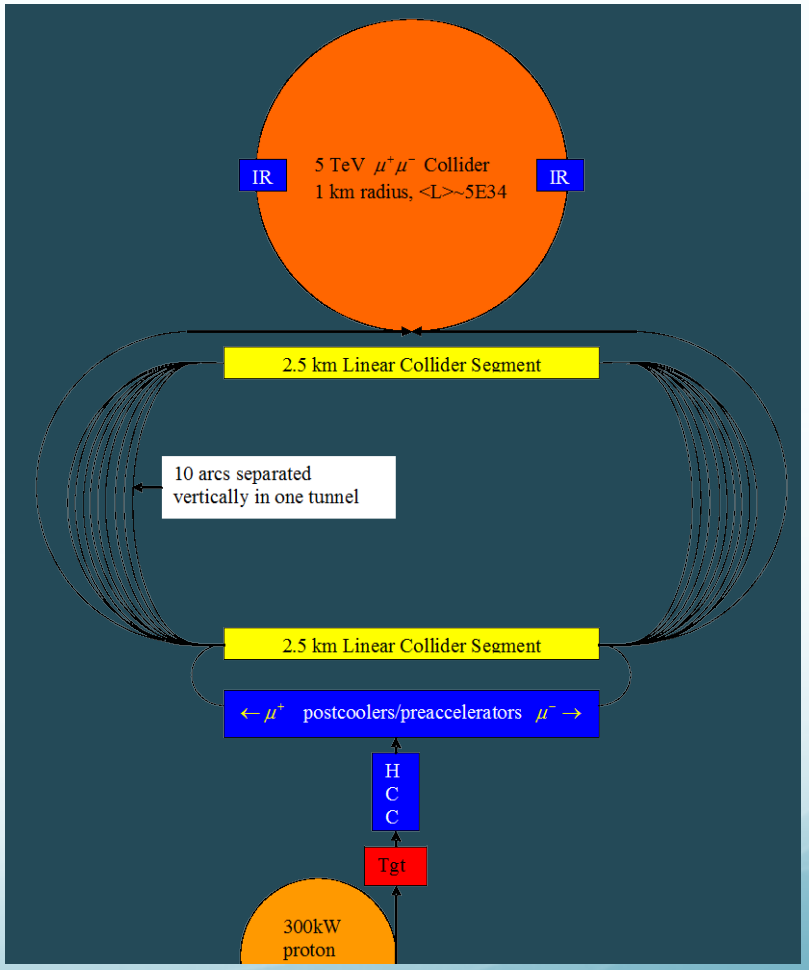
Claudio Pellegrini

Pietro Musumeci

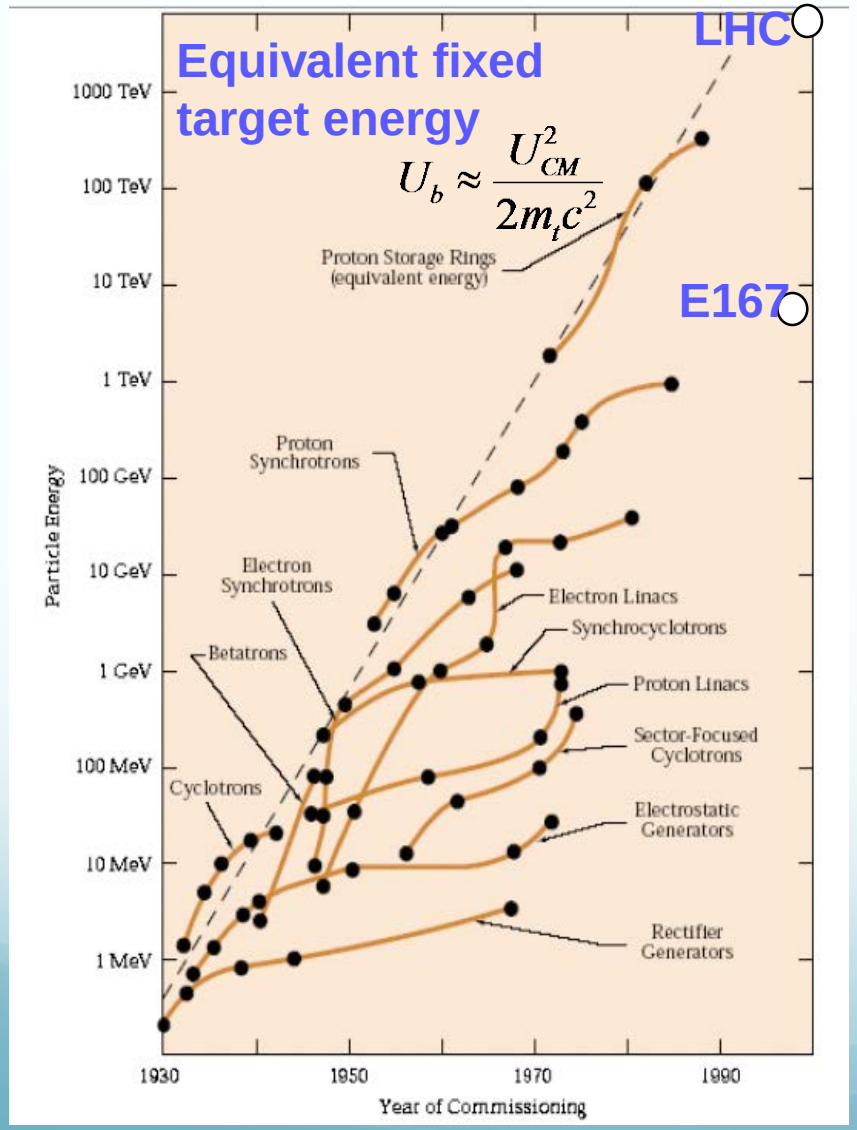
Leads to accomplished accelerator research group, known worldwide (Dawson line not shown)

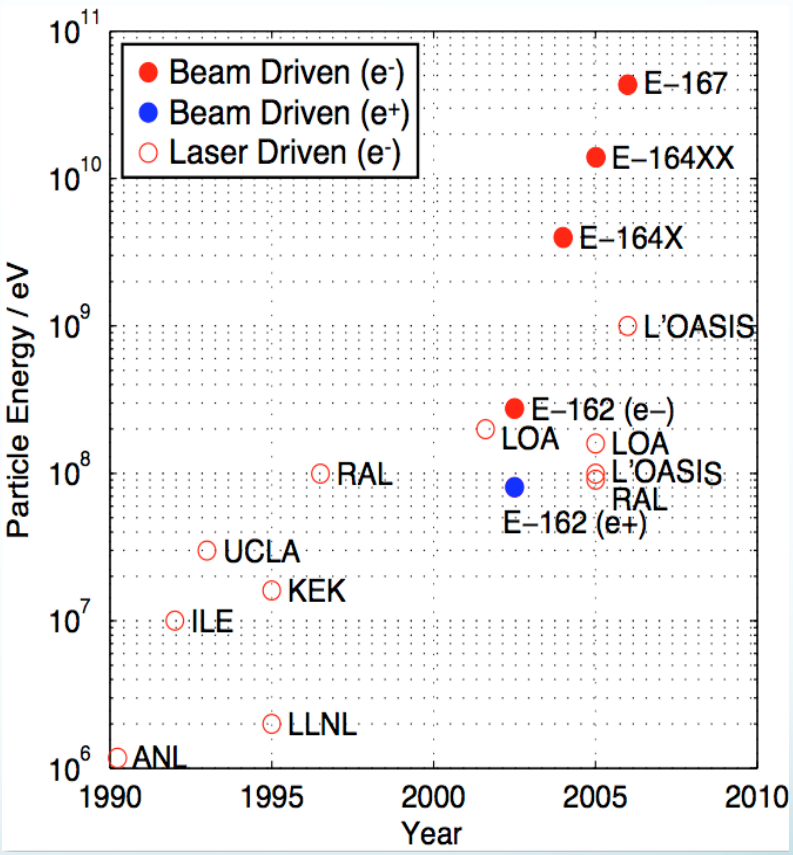
Dave Cline and the UCLA Center for Advanced Accelerators

- Abiding interest in direct "vacuum" laser acceleration
- Ambitious "bet" on muon colliders
  - Linear colliders had/have many difficulties
- Very high impact, timing not perfect



Plasma Accelerators History: Livingston Plot



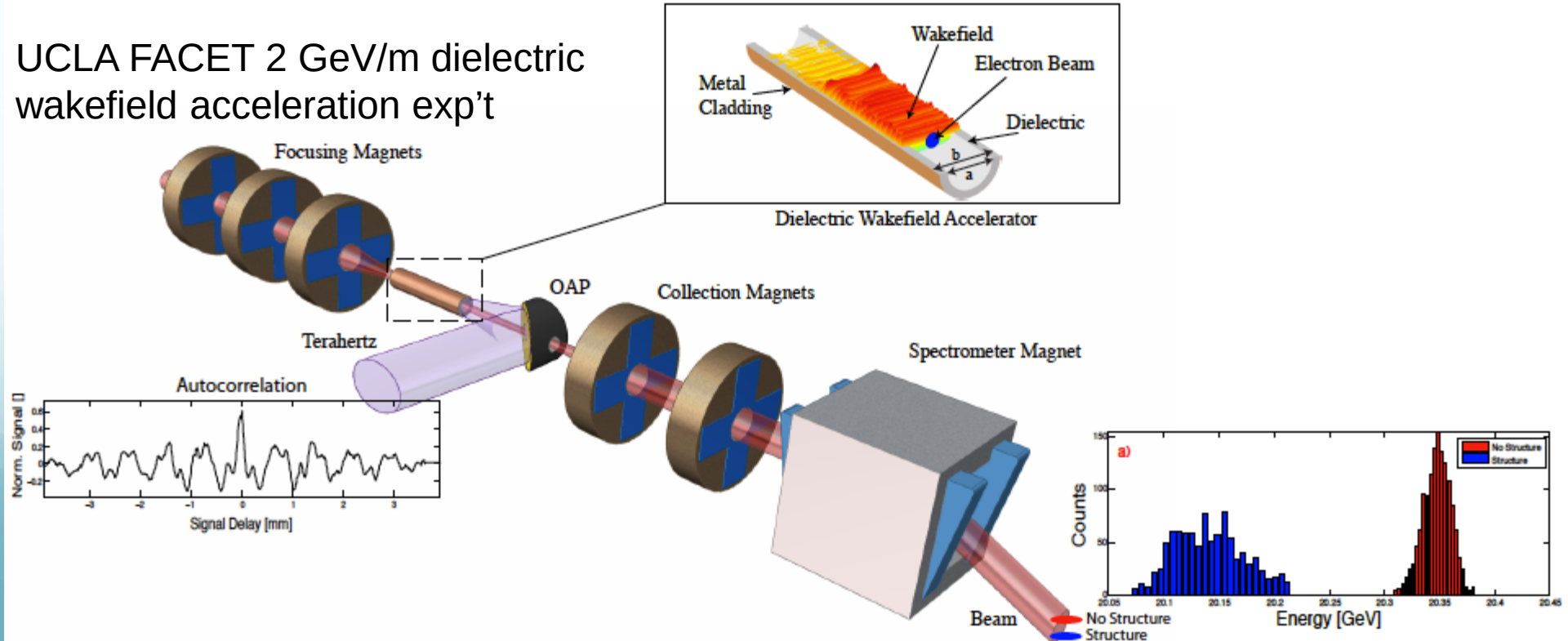


Plasma wakefield accelerato (actual, not "equivalent")

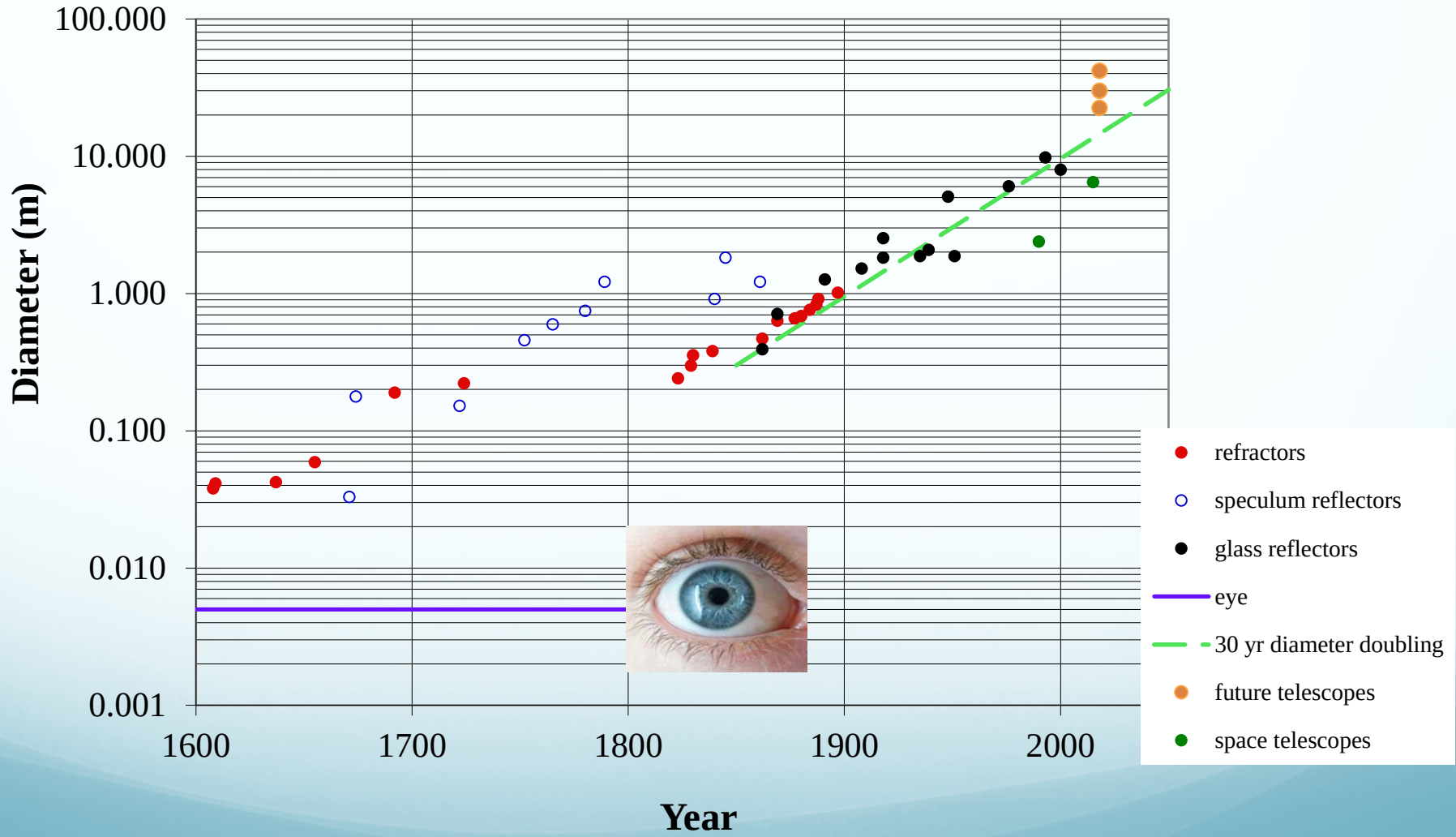
The ongoing saga of wakefield accelerators

- Wakefield accelerators were named in recent HEPAP panel for >TeV linear colliders
- Roadmap for 2035 LC start. Our feet are held to the fire now…
- Progress rapid, UCLA central. 1986 idea will have 50 year life!

UCLA FACET 2 GeV/m dielectric wakefield acceleration exp't



An inspiration for accelerator builders: 400 years of optical telescopes



30 year D-doubling (for 12 generations). Disruption/innovation every ~3rd gen.

Adventures with Dave Cline

- Dave had a panoramic vision of his research interests
  - Develop a fundamental understanding of nature
- Was he a deep scientist as well as wide?
  - A few stories illuminate
- His influence will live on for a long time
- We will not see another like him
  - A high roller, who placed many bets, and won quite a few!