Lori Llama - Thesis Defense

3/24/93

- should add evolution to slide 2

6-4 - distribution not uniform after UV

Mammalian Cells Used
c/Human fibroblasts
a/normal
b/ XP -
- extre photosensitivi
- ↑ cancer - esp - skin
- pigmentation abnormal
- neural disorders

c) Cockaynes syndrome
- photosens
- dwarfism
- mental retardation
- no ↑ cancer
- 3 groups
  - CSA
  - CSB
  - CSC - also have XP

d) CHO
- 10 comp. groups
- 1-5 no ER; high UV sensitivity
- 6-10 moderately UV sensitive

History
- Prof repair of actin 1st by Will Bohr
- Human - 1st by I. Mellon
- I. Mellon - prof. repair exclusive by in trans. strand

tRNA letter - t

A-6 = comp. groups

ERCC1 RAD10

ERCC2 RAD3, some UVRA & B
XP-D

ERCC3 SSL2, haywire
XP-B
CS-C

ERCC5 ~RAD2

- ERCC6
CS-B

XPAC ~RAD14
XPA

XPCC ~RAD4
XPC

Rodent
actin vs. inactive = diff in extent of repair
human a vs ina = diff. in rate

XP12RO = SV40 immortalized XP = defic in all
GM637 = SV40 " wt
XP129 = XP12RO + nitrogen + resistant = appear to have low overall CPD removal but survival OK

DHFR HindIII frg 7½ J/m² KpnI frg = only DHFR transcript

GM637 = eff. repair, strand specific
XP12RO = none
XP129 = eff. repair but less, strand specific high repair in TS, ∅ in NTS

XP12RO = homozygous C→T at 619
207 Arg → Stop

XP129
- C→G at 619
- Stop → Gly

CHO = UV resistant

Is XP129 analagous to CHO cells?

	UV res.	tsc	CPD ntsc	overall	6-4 overall	
Normal	resistant	++++	+++	+++	+++	this supports idea that removal of CPDs from TS genes is essential for UV resistance.
XP C	intermediate	**++++**	−	+	+	
CS-A	intermediate	++	++	+++	+TO	

CHO
wt = AA8 = low CPD removal, OK 6-4 removal
= OK in tsc
UV61 = low CPD removal, OK 6-4 removal; slightly higher UV resist than UV5
= OK CPD tsc removal
UV5 = UV sensitive, no removal of either
= no ts, or nts

	UV	tsc	CPD ntsc	overall	6-4 overall
Normal	resist	**++++**	−	+	+++
UV5	sens.	−	=	→	−
UV61	inter.	++	−	−	+++