Oncogene —

dominant gain-of-function mutations
promote cell transformation

Tumor suppressor gene —

recessive, loss-of-function mutations
promote cell transformation
Images removed due to copyright reasons.
growth checks (DNA synthesis)

S

G1

G0

Extracellular growth control signals

Intracellular quality control checks

Daughter cells

M (Mitosis)

G2

S (DNA synthesis)

Figure by MIT OCW.
Cell cycle in *S. cerevisiae*

- **M**: Mother cell
- **G₁**: Growth
- **S**: DNA replication
- **G₂**: Spindle pole body duplication
- **START**: Spindle formation
- **Cytokinesis**: Chromosome segregation; nuclear division
- **Nuclear migration**: Bud emergence

Figure by MIT OCW.
A Genetic Screen for Cell Cycle Mutants

Yeast in liquid culture

Add mutagen; distribute into smaller aliquots

Plate out individual aliquots

Incubate at 23 °C for 5 h

Colonies

Agar

Temperature-sensitive for growth; growth at 23°, no growth at 36°

Replica-plate and incubate

23 °C

36 °C

Figure by MIT OCW.