CHAPTER 17: FROM GENE TO PROTEIN

(8) Technique used to identify & isolate mutant fungi

<table>
<thead>
<tr>
<th></th>
<th>Wild Type</th>
<th>Class I Mutants</th>
<th>Class II Mutants</th>
<th>Class III Mutants</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM (control)</td>
<td><img src="image1" alt="" /></td>
<td><img src="image2" alt="" /></td>
<td><img src="image3" alt="" /></td>
<td><img src="image4" alt="" /></td>
</tr>
<tr>
<td>MM + ornithine</td>
<td><img src="image5" alt="" /></td>
<td><img src="image6" alt="" /></td>
<td><img src="image7" alt="" /></td>
<td><img src="image8" alt="" /></td>
</tr>
<tr>
<td>MM + citruline</td>
<td><img src="image9" alt="" /></td>
<td><img src="image10" alt="" /></td>
<td><img src="image11" alt="" /></td>
<td><img src="image12" alt="" /></td>
</tr>
<tr>
<td>MM + arginine (control)</td>
<td><img src="image13" alt="" /></td>
<td><img src="image14" alt="" /></td>
<td><img src="image15" alt="" /></td>
<td><img src="image16" alt="" /></td>
</tr>
</tbody>
</table>

Summary of results:
- Can grow with or without any supplements
- Can grow on ornithine, citruline, or arginine
- Can grow only on citruline or arginine
- Require arginine to grow

*MM: minimal medium

gene → wild type → class I mutants (mutation in gene A) → class II mutants (mutation in gene B) → class III mutants (mutation in gene C)

gene A → precursor Enzyme A → precursor Enzyme A → precursor Enzyme A → precursor Enzyme A

Gene B → ornithine Enzyme B → ornithine Enzyme B → ornithine Enzyme B → ornithine Enzyme B

Gene C → citruline Enzyme C → citruline Enzyme C → citruline Enzyme C → citruline Enzyme C
initiation of Transcription at a eukaryotic promoter
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**43** RNA processing

- exons
- introns
- 5' cap
- poly-A tail

RNA splicing: introns removed

pre-mRNA

mRNA

**47** snRNPs and spliceosomes

**55** transfer RNA

- amino acid attachment site

**61** ribosome

- exit tunnel
- small subunit
- large subunit
- ribosome binding site
- anticodon

- mRNA
eukaryotic transcription & translation