

## Module 2: Expression Engineering

20.109  
Lecture 1  
October 11th, 2007

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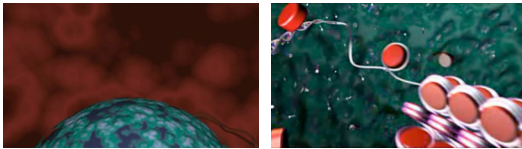
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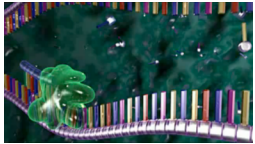
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### Eukaryotic Gene Expression

*Obstacles to expression*



*Transcription*



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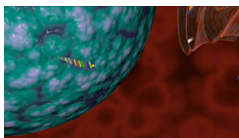
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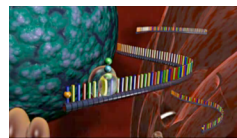
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### Eukaryotic Gene Expression

*mRNA processing*



*Export*



*Translation*

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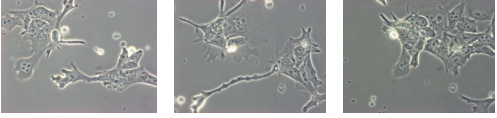
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DNA---> RNA--> Protein



This movie was taken over a 12-hour period. 

Movie credit: Kristina Yu, © Exploratorium, www.exploratorium.edu

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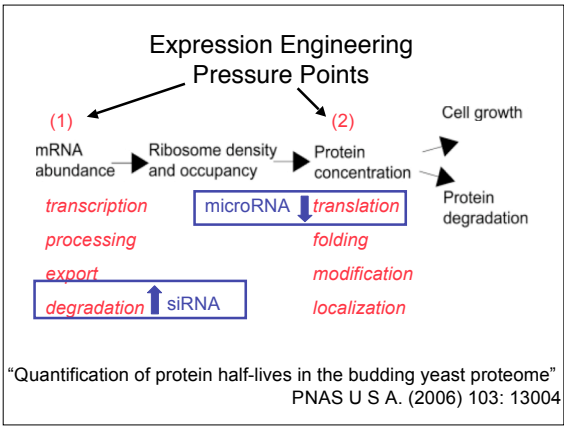
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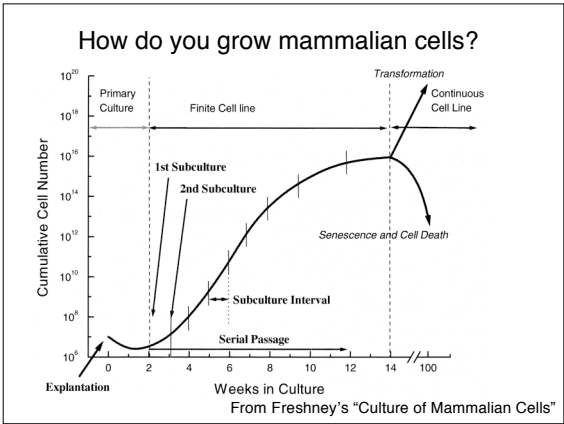
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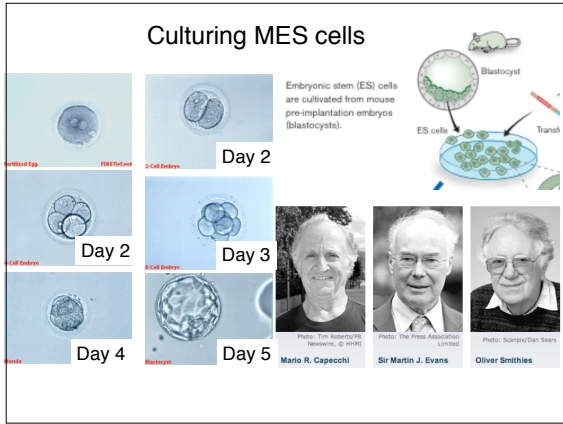
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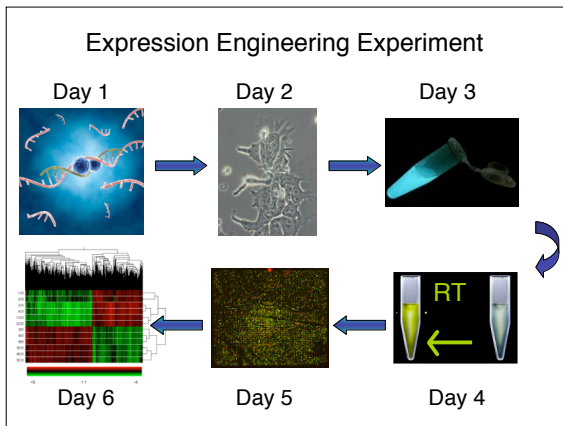
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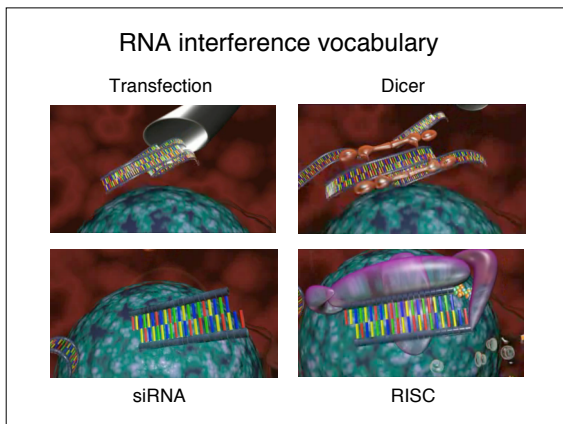
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Expression Engineering Experiment	
<p><u>Lecture 1</u></p> <ul style="list-style-type: none"> <li>• intro to cell culture</li> <li>• intro to gene exp'n/RNAi</li> </ul>	<p><u>Lecture 2</u></p> <ul style="list-style-type: none"> <li>• transfection</li> <li>• luciferase</li> </ul>
<p><u>Lecture 3</u></p> <ul style="list-style-type: none"> <li>• off-target/nonspecific RNAi</li> </ul>	<p><u>Lecture 4</u></p> <ul style="list-style-type: none"> <li>• Writing lecture (Neal Lerner)</li> </ul>
<p><u>Lecture 5</u></p> <ul style="list-style-type: none"> <li>• measuring gene express'n</li> </ul>	<p><u>Lecture 6</u></p> <ul style="list-style-type: none"> <li>• microarray analysis (Rebecca Fry)</li> </ul>
<p><u>Lecture 7</u></p> <ul style="list-style-type: none"> <li>• high throughput technologies or RNAi applications (no lab)</li> </ul>	<p><u>Lecture 8</u></p> <ul style="list-style-type: none"> <li>• review of your data</li> </ul>

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
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## Summary

1. Eukaryotic gene expression
2. Cell culture basics
 

2a. cells in the lab




2b. cells reaction times require  $\Delta$  protein
3. RNAi features
 

21bp siRNAs

Dicer

RISC

bind and destroy target mRNA



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