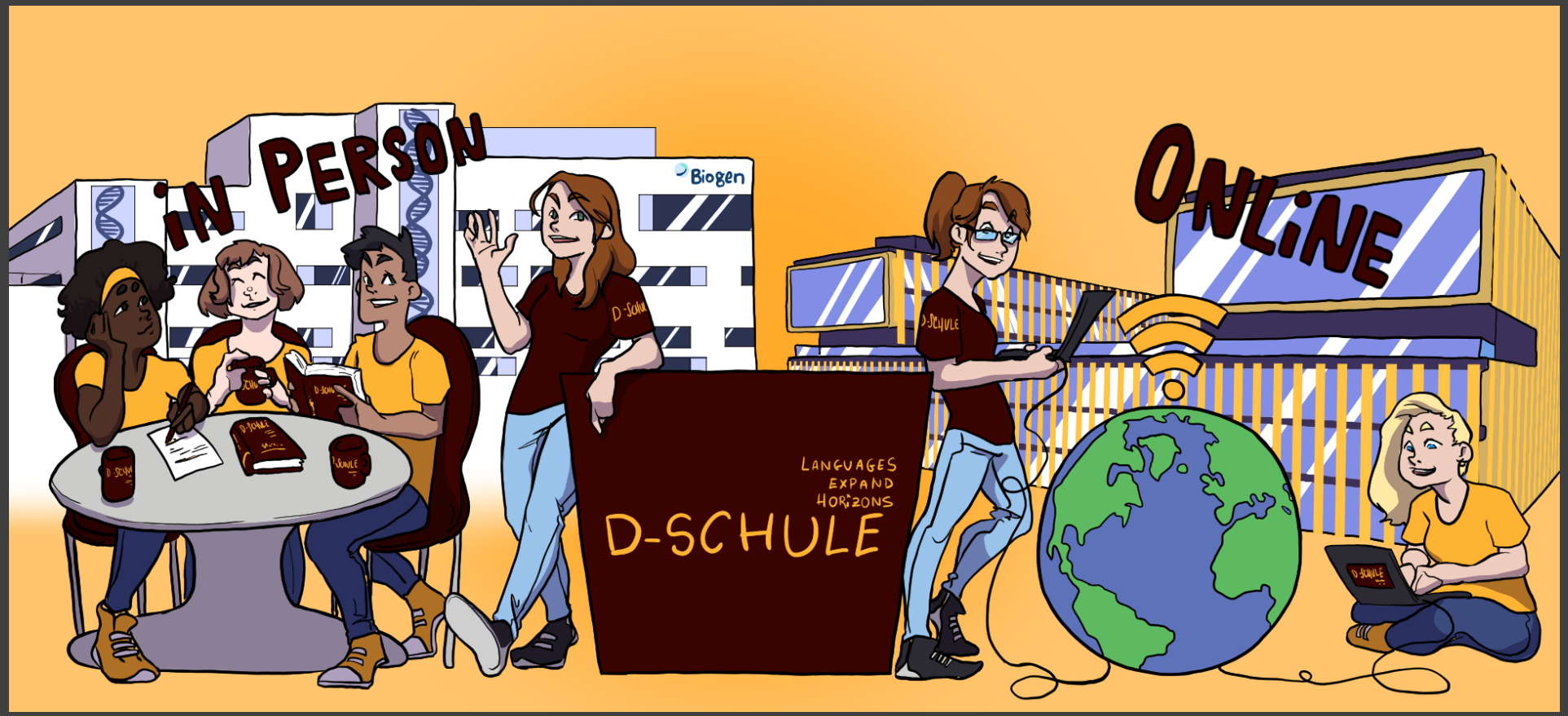
Biogen Specific Teaching Material

Introduction to USP – Fed-batch Operation



Questions & Answers

1. Which is the simplest fed-batch culture?

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1. The simplest fed-batch culture is one which has a constant feed rate of growth-limiting substrate.

2. What happens when the feed rate of the growth-limiting substrate is increased in proportion to the exponential growth rate of the cells?

2. The cells' specific growth rate is extended while the substrate concentration in the culture liquid remains constant.

3. Why, in a fed-batch strategy, is the feed solution mostly highly concentrated?

3. A highly concentrated solution avoids dilution in the bioreactor.

4. Fill in the gaps: Substrate limitation allows the metabolic control to avoid osmotic _____, catabolite repression and _____ metabolism of ____ products.

4. effects, overflow, side.

5. Why is the fed-batch strategy typically used in bio-industrial processes?

5. The fed-batch strategy is typically used in bio-industrial processes so as to reach a high cell density in the bioreactor.

6. Name the three strategies for cell culturing.

6. The strategies (listed in the text) are high cell-density culture, constantly-fed-batch culture, and exponential-fed-batch culture (+ substrate limitation)

7. Which strategy allows for the metabolic control for avoiding osmotic effects, catabolite repression and overflow metabolism of side products?

7. Substrate limitation allows for the metabolic control for avoiding osmotic effects, catabolite repression and overflow metabolism of side products.

8. What grows exponentially under ideal conditions?

8. Cells grow exponentially under ideal conditions.

Thank you for your attention!

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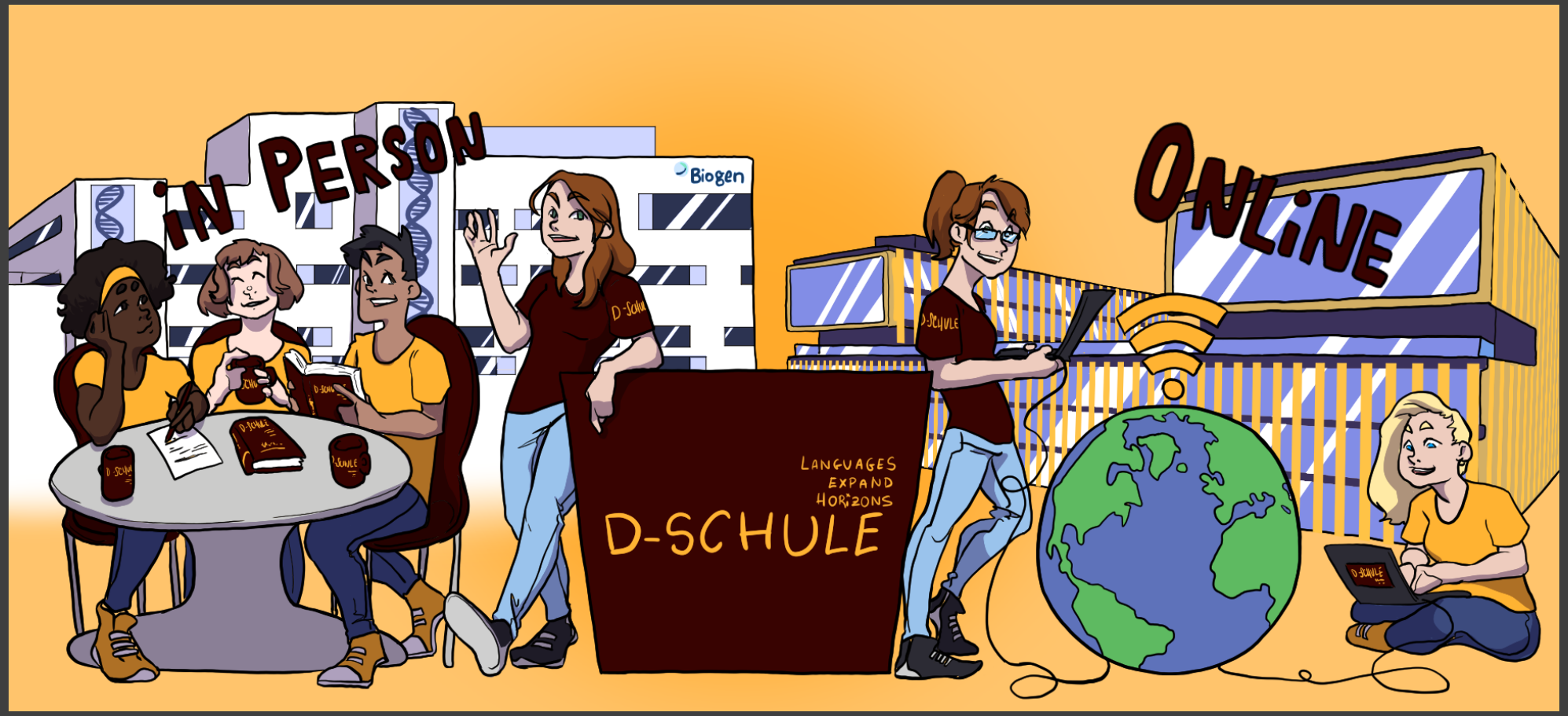

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