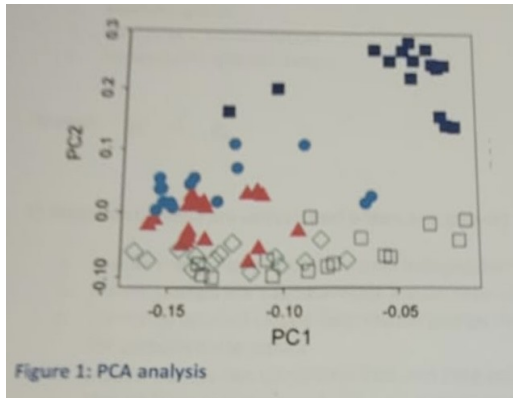


3. critical
4. SUI - Is muscle injection promising
 1. illegal
 2. **promising results**
 3. bad results (cells washed out)
 4. contradictory results
5. For optimal cell therapy of the delicate urethral sphincter muscle by minimally invasive technologies, navigation of surgical instruments is a must. Which technology is applied for controlling?
 1. magnetic resonance therapy
 2. **ultrasound imaging**
 3. X-Ray imaging
 4. none of the above
6. Muscle cells of sphincter
 1. smooth muscle tissue and connective tissue
 2. striated muscle tissue and connective tissue
 3. **striated muscle tissue and smooth muscle tissue**
 4. connective and urothelial tissue

QBIC and proteomics - Nahnsen and Boldt

7. In virtually any proteomics study, proteolytic cleavage is used to process the protein sample before these are analyzed by LC-MS. Why is proteolytic cleavage performed, and what are the potential challenges introduced by this procedure? (more than one)
 1. Proteolytic cleavage is necessary to reduce the sample complexity, enabling the comprehensive analysis of all proteins within a sample
 2. **It is necessary to reduce the molecular weight of the analytes, to perform standardized, high-throughput analysis**
 3. **The complexity of the sample is increased and therefore even, more analytes can be detected by the mass spectrometer**
 4. There is no major advantage of using proteolytic cleavage

8. In a recent biomarker study for a neurodegenerative disease, protein expression profiles have been recorded from different patients... What is correct?



1. The location of the symbols in the PCA plot indicate the geographic distribution of the hospitals where the patients and volunteers have been recruited for the study.
 2. Each symbol corresponds to a protein and the proximity of points indicate protein-protein binding affinity
 3. **The PCA presents a reduction of a 896-dimensional space to a 2-dimensional space. The proximity of two symbols in this space correlates with the similarity of their protein expression profiles of the 896 proteins that have been quantified.**
 4. PC1 and PC2 show the results from individual t-tests of the 2 proteins with highest variance across the entire data set. The PCA is a hierarchical cluster according to the biological processes that are overrepresented in the neurodegenerative disease of interest
9. Have 100 tests of proteins how to analyse them?
1. Sum up all intensities and compare with literature
 2. Sum up all intensities and compare different
 3. **Find features and compare those with literature**

Beta cell replacement - Julia Marzi

10. Which is an implant needed as a result of diabetes (several answers correct)
1. Dental implants
 2. **Pancreas transplant**
 3. Vascular graft
 4. **Insulin pump**
 5. **Subcutaneous Insulin sensor**
- (maybe all right if long term effects are considered)

11.What is true about insulin pumps (several answers correct)

1. Closed loop systems that are applied today require own application after carbohydrate intake
- 2. Closed loop systems combine sensing with insulin application**
- 3. They can apply fast and slow acting insulin**
- 4. Insulin reservoir is under the skin**
5. They make the patient independent from insulin

12....

Cardiovascular Tissue Engineering - Julia Marzi

13.What can be improved by Tissue engineering compared to conventional methods? (several correct)

- 1. thrombus in small vessels**
- 2. growth of valves with children**
- 3. Functionality of mechanical / bioprosthetic valve**
- 4.

14. ...

15.What is incorrect?

- 1. in situ TE with bioresorbable biopolymers**
2. heart valves with long-lasting degradable biopolymers better than fast degradation
3. Surface coating can temper thrombogenesis

Host Responses - Meltem Avci-Adali

16.Foreign body giant cells formed from which cell type

1. neutrophils
2. Mast cells
3. leukocytes
- 4. macrophages**
5. ...

17.Feature of granulated tissue

1. **Angiogenesis**
2. ..

18....

Form and Function - Martin Schenk

19. Form and function what is true about function follows form

1. With dynamics and preserved functionality
2. Without dynamics and without preserved functionality
3. **With dynamics and without preserved functionality**
4. Without dynamics and preserved functionality

20. What is the right order

1. **Mechanosensing - intracellular transition - transfer in nucleus - response**
2. 3 times in a different order

21. Cell interactions which one does not exist?

1. Endokrines
2. Autokrines
3. Gap junction
4. Parakrines
5. **Homokrines**

Microfabrication and Microfluidics - Loskill

22. What properties are only dependent on the fluid (more than one)

1. Reynolds number
2. **viscosity**
3. **density**
4. flow velocity

23. What is not a step in photolithography

1. Curing
2. Spin coating
3. UV radiation with a mask
4. **Elution of the photoresist**

24. Know formulas he told us, which one was correct?

1. The resistance of a round Channel is antiproportional to the length
2. The resistance is proportional to the width
3. **The resistance of a channel can be estimated by dividing the pressure by the flow**
4. The resistance of several parallel channels equals the sum of the resistance

Retina Basics

25. Which statements are correct? (more than one)

1. bipolar cells forward signals from the photoreceptors to the amacrine and ganglial cells
2. Horizontal and amacrine cells are inhibiting cells
3. about ganglial cells
4. about SML rods in mammals and mice monkeys have 3 mice only 2
5. Horizontal cells are the only spiking cells of the eye

26. What is correct about retina implants (several)

1. **epiretinal only stimulating ganglion cells**
2. subretinal ...
3. In disease retinitis pigmentosa the first cells that degenerate are the rods
4. Another alternative to treat eye is gene functionalization (or some other weird word)

Roughness and Hydrophilicity - Frank Rupp and Antonia Theurer

27. What does hydrophilic surfaces improve...

1. **Initial cell and protein interaction**
2. **Earlier stability dip**
3. against bacteria
4. against protein adhesion

28. Optimal Sa roughness

1. **1-2 μm**
2. 1 - 2 nm
3. 10 - 100 nm
4. 10 - 20 μm

29. What does homogeneous wetting according to Cassie and Baxter explain from a effect side...
(potentially this question was wrong bc Cassie and Baxter is heterogeneous wetting)

1. **Hydrophobic becomes more hydrophobic and hydrophilic becomes more hydrophilic**
2. something about Young
3. pores filled with air

30. What is the race of the implant surface?

1. **Cells and bacteria compete**
2. ...

31. What is the first interaction on the implant surface?

1. **Protein adhesion**
2. Coagulation
3. Bacteria adhesion
4. Cell adhesion