Chemistry Protocols and Protocols under development

1. Oxidation of Peptides with N-terminal Serine Residue and Ligation via Oxime Bond Formation
2. Synthesis using Prelude X Peptide Synthesizer
3. Peptide Purification with Preparative HPLC
4. Test Cleavage of peptides from Rink Amide Resin
5. Thin Layer Chromatography (TLC) for testing purity of chemical compounds
6. Preparation of gold-coated glass slides (via gold evaporator)

7. Manual peptide synthesis on multi-outlet manifold (w nitrogen bubbling / vacuum drain)
8. How to purify compounds on CombiFlash system (silica gel column)
9. How to purify peptides/polar compounds on CombiFlash system (C18column)
10. How to use lyophilizer
11. How to use speedvac
12. How to use analytical HPLC
13. How to set up a kinetics analysis on analytical HPLC
14. How to prepare a one-page analysis report for peptide-derivatives
15. How to document a synthesized compound (non-peptide-related)
16. How to document a synthesized compound (peptide-related)
17. How to store synthesized compound (non-peptide-related)
18. How to store synthesized compound (peptide-related)
19.

General Phage protocols and Protocols under development

1. General Phage handling methods
2. How to make X-Gal / IPTG plates
3. How to make top agar
4. How to make LB
5. How to make sterile 6X PEG-NaCl phage precipitation solution
6. How to prepare E2773 master plate and overnight culture
7. How to amplify a clonal phage at 25 mL scale (10^13 PFU/mL stock)
8. How to amplify phage DNA for DeepSeq by nested PCR:
    a. Step 1 Phage Template to qPCR
    b. Step 2 qPCR product to seqPCR
9. How to amplify phage DNA for DeepSeq by one-step PCR (old; use with caution)
10. How to amplify phage DNA for DeepSeq by nested PCR: Step 1 Phage Template to qPCR using Frozen Master mix (20-25 uL template)
11. Gel Electrophoresis to Quantify PCR Products
12. How to make 50X TAE
13. How to make 0.5 M EDTA
14. PCR of isolated phage DNA from panning and amplification (old; use with caution)
15. Preparation of E. coli masterplate & overnight culture
16. Purification of ssDNA from Phage (Home-made buffers and column)
17. How to prepare ligation-ready vector cut by KpnI and EagI restriction enzymes

18. How to make QR Labels for LiGA
19. How to upload new SDBs to 48hr Discovery
20. How to Titer Clonal Phage
21. How to Amplify Clonal Phage for LiGA (10^13 PFU/mL stock)
22. How to PCR Clonal Phage
23. How to Run and Image a Gel
24. How to Submit PCR Tubes for Sequencing
25. How to titer phage on agar overlay
26. How to set up dilutions and titer
27. How to count and record plaques (blue)
28. How to count and record plaques (blue and white)
29. How to count and record plaques (blue, white, green, red)
30. How to pick a clonal phage
31. How to amplify a clonal phage in 2 mL scale (10^11 PFU)
32. How to amplify a clonal phage for LiGA
33. How to amplify phage library to make operational stock

Chemically modified Phage protocols and Protocols under development

1. Modification of serine n-terminated phage libraries with hydroxylamine derivatives and quantification of reaction
2. Modification of phage libraries with DFS
3. Panning DFS Labeled Libraries and Amplification of the Output
4. How to capture a biotinylated phage

Deep Sequencing protocols and Protocols under development

1. How to merge, process and download multiple samples from the cloud
2. How to amplify phage DNA for DeepSeq by nested PCR:
    a. Step 1 Phage Template to qPCR product (1-5 uL of template)
    b. Step 1 Phage Template to qPCR product (20-25 uL of template)
    c. Step 2 qPCR product to seqPCR
3. Illumina data workflow and processing
4. How to sequence phage by Illumina (Phage-->PCR-->Illumina workflow)
5. How to name Illumina Samples
6. How to Download Illumina data from Illumina Cloud
7. How to process LiGA data (starting from unfiltered file)

8. How to submit a sample for sequencing on the cloud
9. How to download a sample from sequencing cloud
10. How to search for your samples on the cloud

Biochemistry protocols and Protocols under development

1. Using Gel Scanner in Gareth Lab
2. Preparation of Sterile 10x Phosphate Buffered Saline (PBS) pH 7.4
3. Quantification of DNA by Qbit Fluorimeter assay
4. eGel electrophoresis of DNA samples
5. How to run a Bis-tris SDS-PAGE
6. How to rapidly purify a his-tagged protein using an IMAC column

7. How to use plate reader in derda lab (multiple protocols)
8. How to use ITC to measure protein ligand binding (multi protocol)
9. How to use BIACORE to measure protein ligand binding (multi protocol)
10. How to coat the protein on 96 well plate
11. How to use King Fisher (multiple protocols)
12.

Cell Biology protocols and Protocols under development

1. How to start using cell culture room (general guidance)
2. How to thaw cells
3. How to split adherent cells with trypsin
4. How to split adherent cells with TripLE
5. How to seed cells into 96 well plate for assays
6. How to count cells in hemocytometer
7. How to measure binding of LiGA to cells

LiGA protocols and Protocols under development

1. How to measure binding of Fc-Siglecs to LiGA using Magnetic Beads and KingFisher
2. How to amplify a clonal phage for LiGA (10^13 PFU/mL stock)
3. How to search for and download LiGA samples from the cloud
4. How to merge, process and download multiple samples from the cloud
5. How to measure binding of LiGA to detached / isolated cells (CHO cell, B cell, etc)
6. How to measure binding of LiGA to Fc-Siglecs using Magnetic Beads and KingFisher
7. How to measure binding of LiGA to Lectins immobilized on 96-well plate
8. How to conjugate an azido glycan to clonal phage via DBCO linker
9. How to conjugate an azido glycan to clonal phage via Cu-click chemistry
10. How to measure binding of LiGA to detached / isolated cells (CHO cell, B cell, etc)
11. How to measure binding of LiGA UB to a Biotinylated CTB protein (magnetic bead; King Fisher)

12. How to make a LiGA library (LiGA 1.0, 2015 design)
13. How to isolate a clone for LiGA synthesis (multi protocol)
14. How to characterize glycosylated clone by MALDI
15. How to modify phage with azido-glycan using DBCO linker
16. How to mix a LiGA from available glycosylated clones
17. How to prepare a multi-barcode mixture
18. How to measure binding of LiGA to a protein (96-well plate)
19. How to measure binding of LiGA to a protein (magnetic bead; Manual)
20. How to measure binding of LiGA to a B cell (isolated cells)
21. How to sequence a LiGA sample

Bioinformatics, Programming and Machine Learning Protocols

1. How to create an account on Github
2. How to start a project on Github
3. How to upload a file to the GitHub repository
4. How to connect to a lab printer
5.