DRY LAB UPDATES

29/06/2023

scFv modelling is complete.

We’re comparing the effectiveness of two different dockings (binding of IL8 with the antibody).

We’re doing research to answer questions related to pharmacokinetics such as those listed below. The progress we’ve made in answering each question is briefly described below each question.

**What concentration of IL8 is ideal?**

We’ve found data on harmful concentrations of IL8 (by looking at the concentrations of IL8 in women with endometriosis). We have an idea of what concentrations of IL8 we definitely do not want in the cells.

Resources:

1. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EYEY7PMMUxZCm49BzXDAaC8BXpFK78c4bqHLBnMyRFxCbQ?e=w1yhy6>
2. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EcpGrvhUXphFpU9f9q6mn9ABP4LcugTm5ujJp69XYZWZuw?e=yNJ81R>

**What is the translation efficiency of our mRNA?**

We have found some in vivo parameters that can determine translation efficiency, including the effect of codon bias, polarity, amino acids composition, etc. We’re identifying the parameters that are most relevant and effective and are looking into how we can identify or measure them.

Resources:

1. <https://www.pnas.org/doi/10.1073/pnas.0909910107>
2. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0016036>

**What is the efficiency with which LNPs are taken up by the cells?**

We found great literature on the pK of LNPs.

We found data on the LNP uptake in different models via different delivery systems targeted at different types of cells, and are hoping to learn more about LNP uptake in endometrial cells.

Resources:

1. <https://indianinstituteofscience.sharepoint.com/:w:/s/iGEM2023/Eer70jGv285PqVZ0XangB7UBQNT0uda2l9y6fz4QJBzs5g?e=EGxUwk>
2. Sheersh’s summary:

<https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EV3MICmS0FpAtvUFQiaXfmgBiJMINpApXg9F3Y0xppoyOw?e=Vvx13M>

**What about the immunogenicity of LNPs?**

We’re looking into the immunogenicity of LNPs.

Resources:

1. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EYYa-adxNExLuGk0Kt8cZF8BXopOp26ZBShts7_9auUrtw?e=g9ZMCS>

**What is the general behavior of LNPs with respect to pharmacokinetics?**

We’ve found the mechanisms of mRNA-LNP delivery systems and are working on the analysis of these mechanisms in terms of the pharmacokinetics.

Resources:

1. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EZHESNDydQlFpfRRpvSIyKUBgr-cV6iL4nALgeRMZ2TJjw?e=rr0EAf>
2. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EYJbaTCtQmhCmU1L4VvGCxQBUDIT_sfCN-hZ8zprLIH8pA?e=ZttkOB>
3. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EVG5BLdVpAZFng4-XbZ8ZuwBm3_Eut8Aykbpt4FjMeHQcQ?e=N8Gqel>
4. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/Eahb-8nj9k9DuMomUHR6feYBP8ExwtlTXvpQ65pFwXLOxQ?e=9Hkihu>

**What are the biomarkers for Endometriosis?**

We have found multiple biomarkers for endometriosis (other than IL8 concentration) and are looking into how we would measure or identify them. We’ve found ample literature in this area.

Resources:

1. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EYVEr7Z4nE9EuQDfMzyWO9wBY0LLdTMi-itFdJzSVsR3qA?e=OleCNw>
2. <https://ascpt.onlinelibrary.wiley.com/doi/full/10.1038/psp.2012.10>
3. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EYVEr7Z4nE9EuQDfMzyWO9wBY0LLdTMi-itFdJzSVsR3qA?e=XnwCPg>
4. <https://ascpt.onlinelibrary.wiley.com/doi/10.1111/cts.13040>

Additionally:

* We have been looking into ELISA.
* We’ve fairly understood the mRNA-LNP delivery system.

1. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EZwMjfCuhgxDpNbx3O6NjnsBMADUwcAqe0KW5GySx-Zi-Q?e=DOnyGH>
2. <https://indianinstituteofscience.sharepoint.com/:b:/s/iGEM2023/EY16KBZHiRNLhjC5blBmr4oBq8GvCoJXv750Kg6QnpoGaA?e=5I2Maf>)
3. Sheersh’s Summary (very useful):

<https://indianinstituteofscience.sharepoint.com/:w:/s/iGEM2023/EQHhWs4n5YlIslbSHQB8RkcBDI_hlYR_z1W8mCEOgWZAng?e=ngNP1E>)

Please check out the files in the Dry Lab division for a more extensive set of resources.