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Using PRINT® particle technology for drug delivery

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Background and Study: By leveraging techniques from the semiconductor industry, Liquidia developed a proprietary micro- and nanoparticle PRINT® platform, which has the ability to rapidly design and manufacture precisely engineered particles of virtually any size, shape, or composition at the tens of nanometer scale. PRINT® was used to fabricate uniform, monodisperse particles of various sizes and shapes to be used in different drug delivery applications. The following drug delivery applications and the effects of the PRINT platform will be discussed: sustained release of injectables, sustained release of dermal topicals,and the formulation of small molecules and biologics using the PRINT platform.

Results: The following results will be reviewed: the effect of size and shape on controlled and sustained release of APIs (biologics and small molecules), encapsulation of poorly soluble APIs using PRINT, and controlling PRINT particle forms (amorphous vs crystalline).

Conclusions: PRINT particles can incorporate small molecules (including difficult to formulate molecules) in a wide range of particle sizes and shapes to allow for improved properties such as enhancing dissolution profiles of poorly soluble drugs.Biologics such as Bevacizumab were encapsulated in PRINT particles of various sizes to fine tune monoclonal antibody release in vitro. Injectable PRINT particles were tuned to release API at different rates via various shapes and compositions.

Biography:

Donald Campbell was born in Louisiana. He is a graduate of the Louisiana School for Math, Science and the Arts. He attended Tulane University where he received a BSE in Biomedical Engineering. He also attended Case Western Reserve University where he received a MS in Biomedical Engineering. He currently lives in Durham, North Carolina and works at Liquidia Technologies located in Research Triangle Park, North Carolina.