used to improve optimization and understanding of new parenteral drug formulations in a rapid and convenient manner.

Liang, S. et al. (2016). "Solution formulation development and efficacy of MJC13 in a preclinical model of castration-resistant prostate cancer." *Pharm Dev Technol* 21(1):121–126.

MJC13, a novel FKBP52 targeting agent, has potential use for the treatment of castration-resistant prostate cancer. The purpose of this work was to develop a solution formulation of MJC13 and obtain its efficacy profile in a human prostate cancer xenograft mouse model. Preformulation studies were conducted to evaluate the physicochemical properties. Co-solvent systems were evaluated for aqueous solubility and tolerance. A human prostate cancer xenograft mouse model was established by growing 22Rv1 prostate cancer cells in C.B-17 SCID mice. The optimal formulation was used to study the efficacy of MJC13 in this preclinical model of castrate-resistant prostate cancer. We found that MJC13 was stable (at least for 1 month), highly lipophilic (logP = 6.49), poorly soluble in water (0.28 microg/mL), and highly plasma protein bound (>98%). The optimal formulation consisting of PEG 400 and Tween 80 (1:1, v/v) allowed us to achieve a MJC13 concentration of 7.5 mg/mL and tolerated an aqueous environment. After twice weekly intratumoral injection with 10 mg/kg MJC13 in this formulation for four consecutive weeks, tumor volumes were significantly reduced compared to vehicle-treated controls.

Madsen, C. M. et al. (2018). "Effect of composition of simulated intestinal media on the solubility of poorly soluble compounds investigated by design of experiments." *Eur J Pharm Sci* 111:311–319.

The composition of the human intestinal fluids varies both intra- and inter-individually. This will influence the solubility of orally administered drug compounds, and hence, the absorption and efficacy of compounds displaying solubility limited absorption. The purpose of this study was to assess the influence of simulated intestinal fluid (SIF) composition on the solubility of poorly soluble compounds. Using a Design of Experiments (DoE) approach, a set of 24 SIF was defined within the known compositions of human fasted state intestinal fluid. The SIF were composed of phospholipid, bile salt, and different pH, buffer capacities and osmolarities. On a small-scale semi-robotic system, the solubility of 6 compounds (aprepitant, carvedilol, felodipine, fenofibrate, probucol, and zafirlukast) was determined in the 24 SIF. Compound specific models, describing key factors influencing the solubility of each compound, were identified. Although all models were different, the level of phospholipid and bile salt, the pH, and the interactions between these, had the biggest influences on solubility overall. Thus, a reduction of the DoE from five to three factors was possible (11–13 media), making DoE solubility studies feasible compared to single SIF solubility studies. Applying this DoE approach will lead to a better understanding of the impact of intestinal fluid composition on the solubility of a given drug compound.

Manda, S. et al. (2016). "Discovery of a marine-derived bis-indole alkaloid fascaplysin, as a new class of potent P-glycoprotein inducer and establishment of its structure-activity relationship." *Eur J Med Chem* 107:1–11.

The screening of IIIM natural products repository for P-gp modulatory activity in P-gp over-expressing human adenocarcinoma LS-180 cells led to the identification of