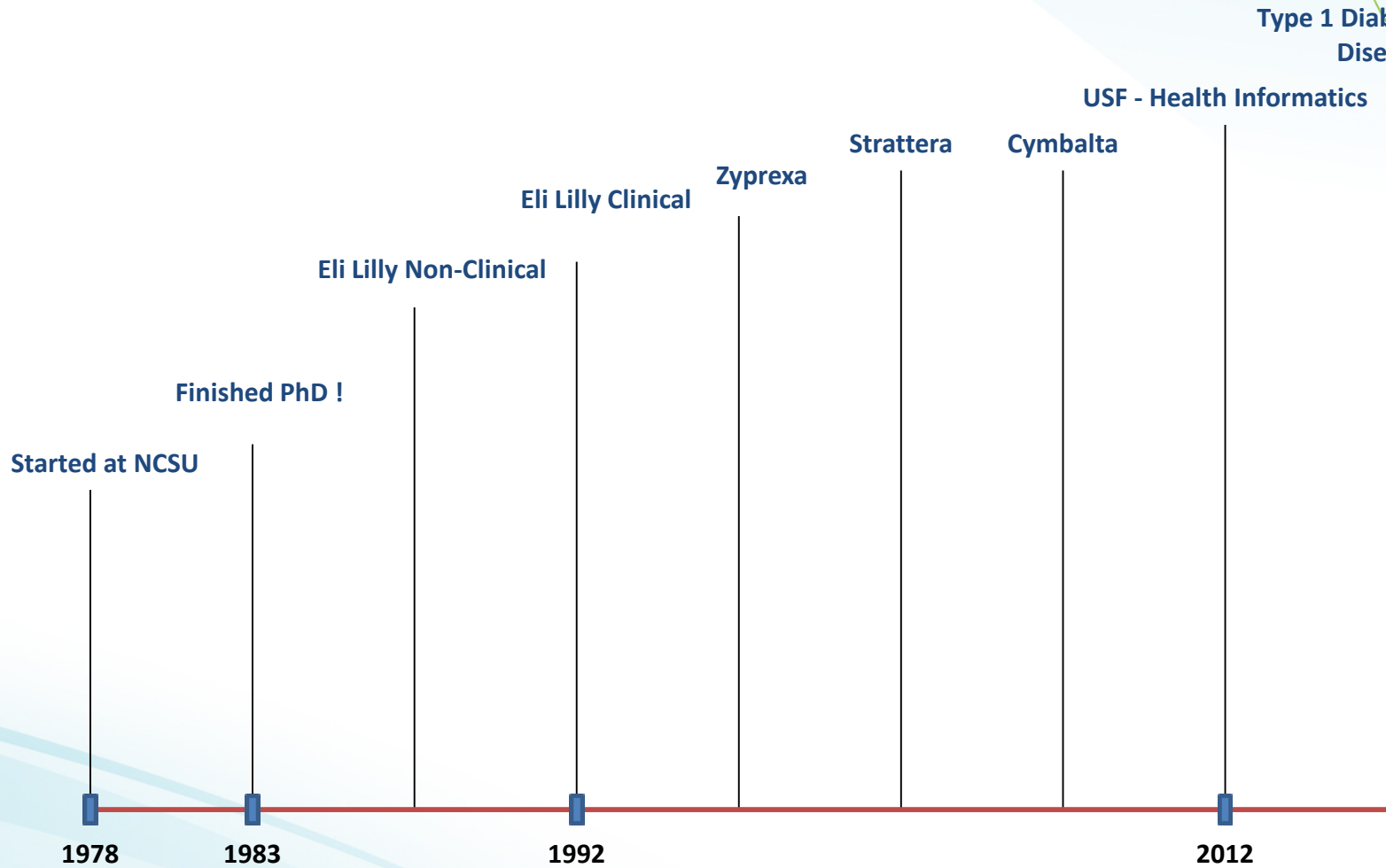


Twenty Five Years Designing Clinical Trials and Still Learning

Roy N. Tamura

**Health Informatics Institute
University of South Florida**

Career Timeline



Type 1 Diabetes, Rare Diseases

Clinical Trial Design Advancements – Past 25 Years

- 1. Group Sequential Designs:** alpha spending functions,
efficacy monitoring
futility analyses
- 2. Adaptive Designs:** sample size, randomization,
stratification
- 3. Enriched Designs:** biomarker based, response
based
- 4. Multi-stage Designs:** SMART (sequential multiple
assignment randomized trials)

and many other useful proposals.

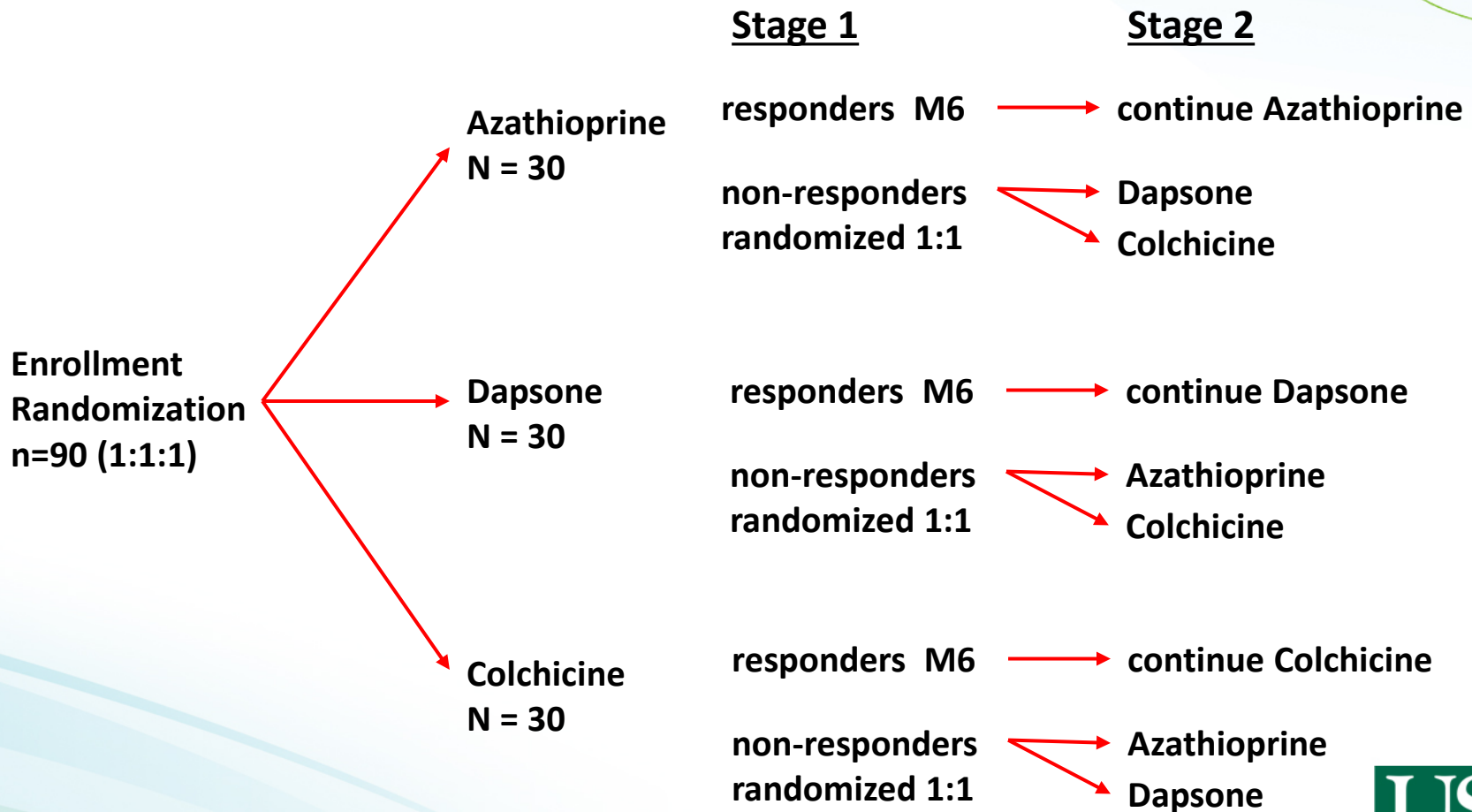
NIH Rare Disease Network Project

Isolated Skin Vasculitis: No current effectiveness information on any drug

Trial: Compare dapsons, colchicine, azathioprine over six month period.

Goal: Find the best drug and compare that drug with the next best drug.

ARAMIS - Small n Sequential Multiple Assignment Randomized Trial (snSMART)



Weighted Z Statistic

Let d_1 and d_2 be the difference in response rates between Drugs A and B in Stages 1 and 2 respectively.

Let Var_1 and Var_2 be the usual pooled variances in Stage 1 and Stage 2.

$$Z_w = (wd_1 + (1-w)d_2) / \sqrt{(w^2\text{Var}_1 + (1-w)^2\text{Var}_2)}$$

w is the weight for each Stage. See Tamura, et al. 2016, *Contemporary Clinical Trials* on how to chose w).

PCORI Improving Methods Contract

**U Michigan Biostatistics (Kelley Kidwell – PI) and
U South Florida Rare Disease Network (me)**

**Consolidate information from both stages of an
snSMART to make overall drug recommendation**

**Investigate incorporation of adaptive design elements
into snSMART**

Develop user friendly app for power, sample size

Appreciation for NCSU – Statistics Department

Role models for both research and application.

Emphasis on experimental design / collaboration with researchers.

Support, advice, and encouragement throughout my career.

Best wishes to the Department for their Next 75 Years!