




Treatment response predictions for adaptive radiation dose and dose fractionation personalization

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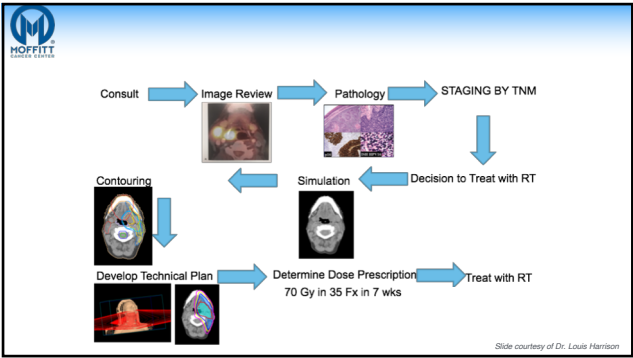


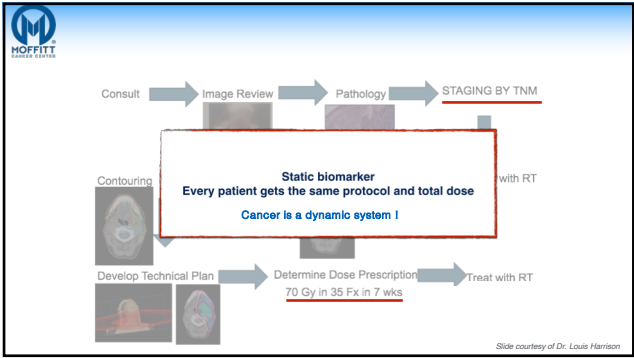
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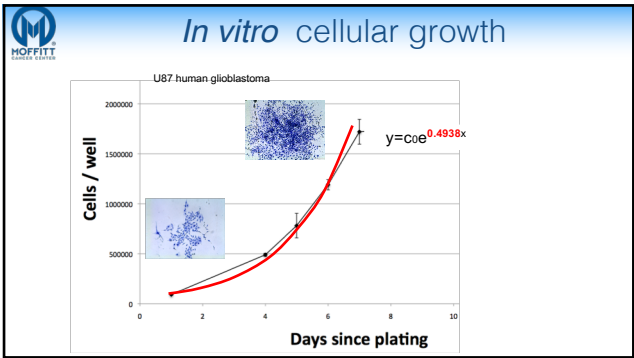


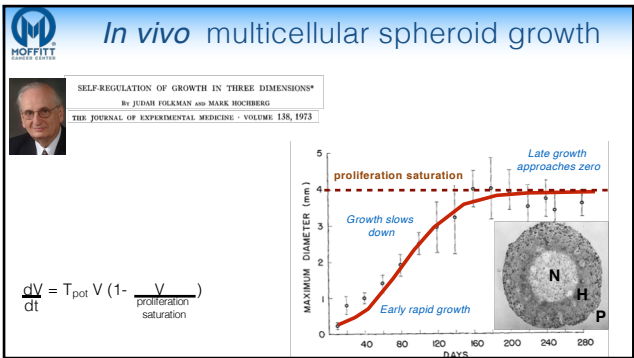
Disclosures

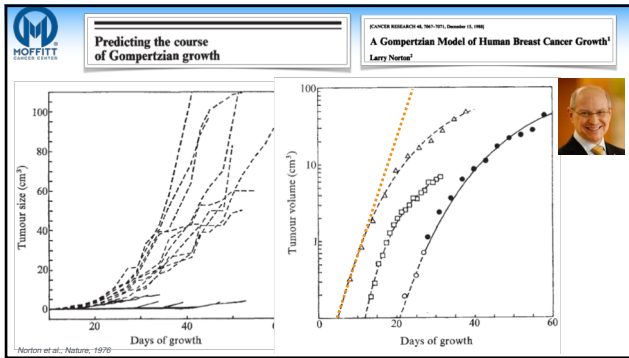
I have nothing to disclose.

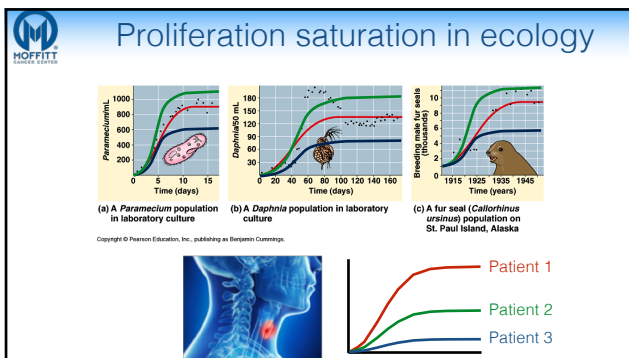


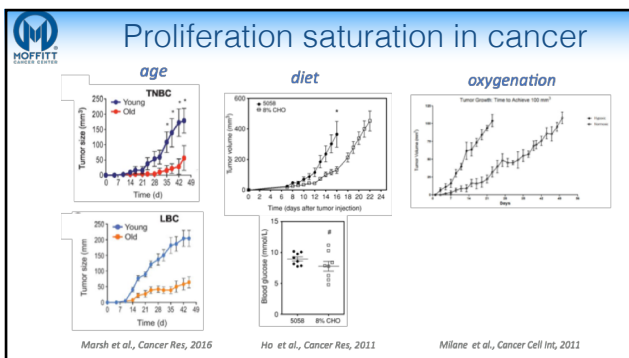


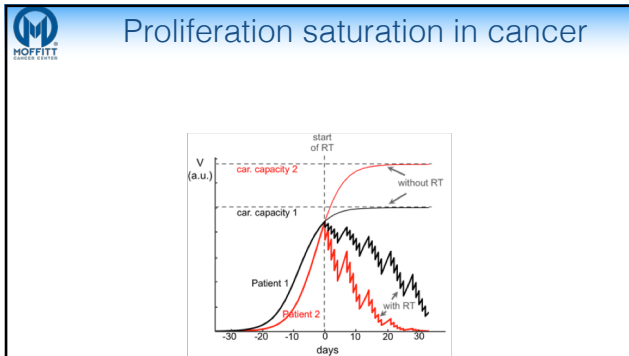


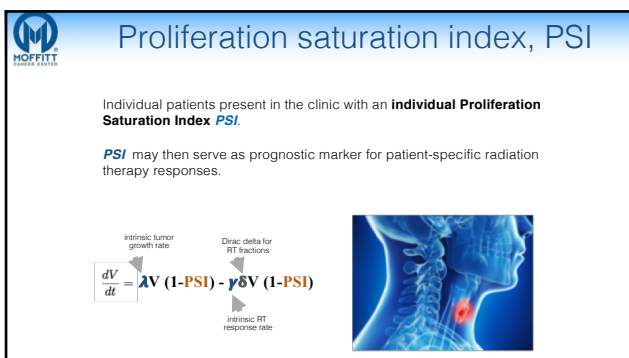


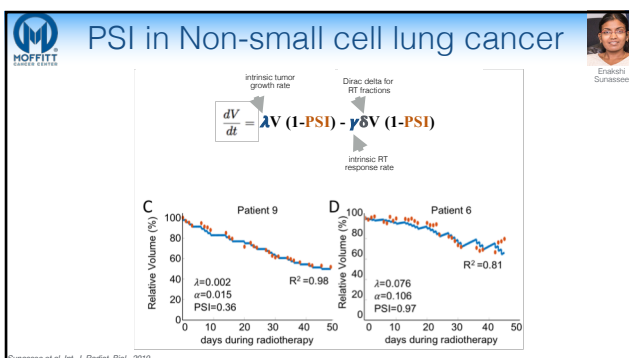


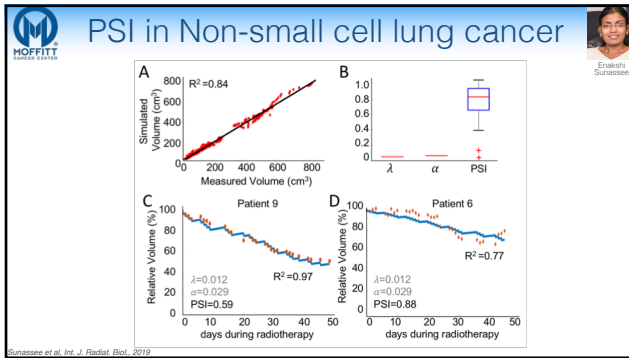


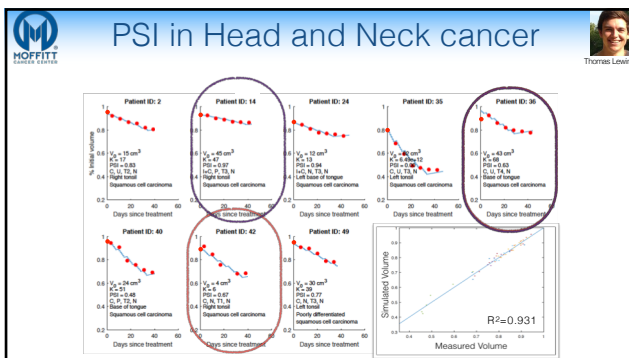








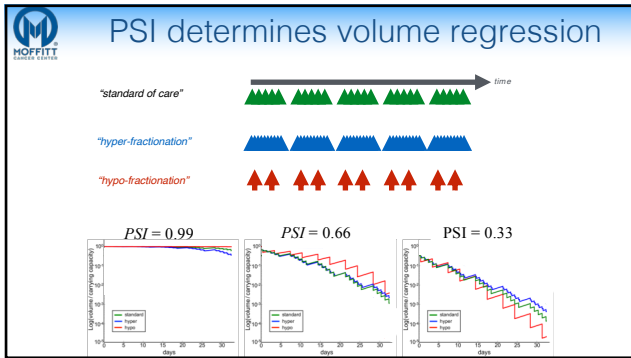


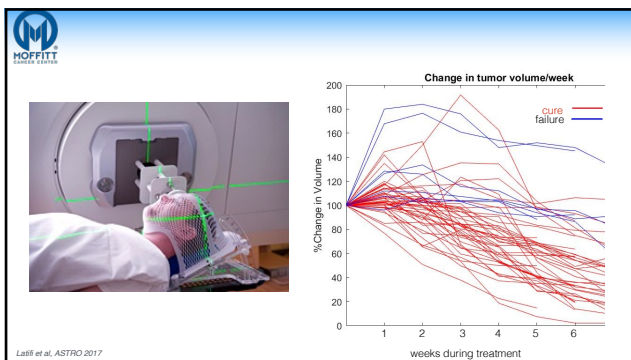


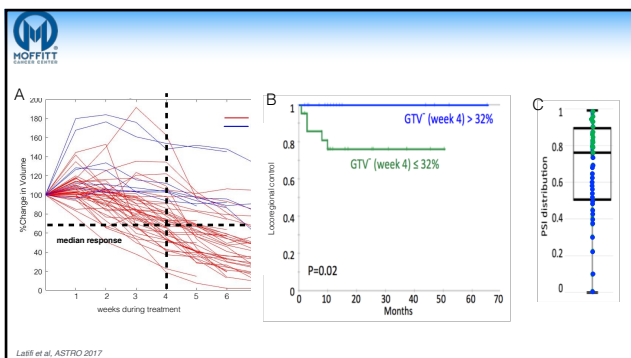
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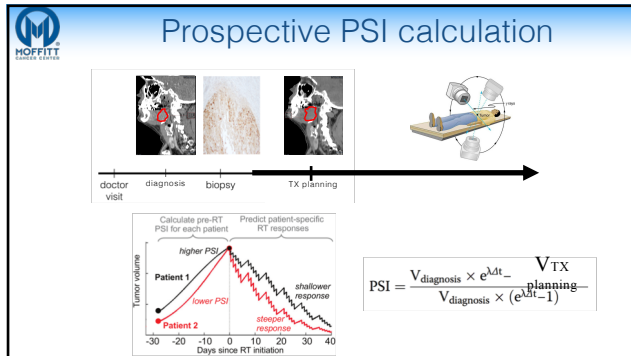
Can we predict the response to fractionated radiation before treatment on a per patient basis ?

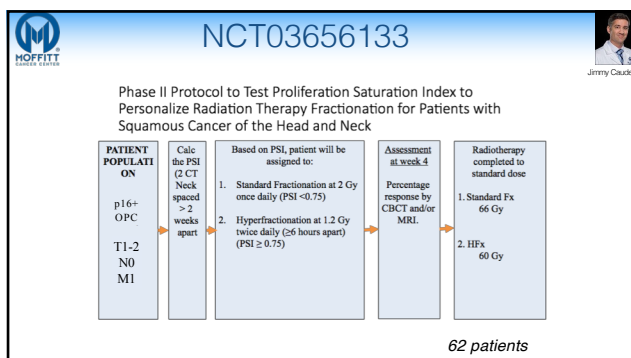
How to change treatment for patients predicted to fail ?












- Simple mathematical model**
- one variable, one term, one parameter
 - to learn patient-specific growth dynamics
 - to predict response to radiotherapy
 - to personalize fraction to maximize response
 - evaluate response in N=1 trials



Response Evaluation Criteria In Solid Tumors (RECIST)

- **Complete Response (CR):** Disappearance of all target lesions
- **Partial Response (PR):** At least a 30% decrease in the sum of the LD of target lesions, taking as reference the baseline sum LD
- **Stable Disease (SD):** Neither sufficient shrinkage to qualify for PR nor sufficient increase to qualify for PD, taking as reference the smallest sum LD since the treatment started
- **Progressive Disease (PD):** At least a 20% increase in the sum of the LD of target lesions, taking as reference the smallest sum LD recorded since the treatment started or the appearance of one or more new lesions

