

## Cancer Commons and Sage

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Cancer Commons is a social network linking cancer patients, physicians and scientists in a rapid learning community. Patients are treated in accord with the best available knowledge on targeted- and immunotherapies, and that knowledge is updated based on each patient's response.

Cancer Commons was launched with an elite Editorial Advisory Board, chaired by George Lundberg M.D., formerly Editor-in-Chief of JAMA. Thus far, we have published expert-curated Molecular Disease Models (MDMs) for melanoma, lung and colorectal cancers ([cancercommons.org/disease-models](http://cancercommons.org/disease-models)). Each of these peer-reviewed and PubMed-indexed models enumerates the clinically actionable molecular subtypes of a cancer, along with recommended drugs and trials. The MDMs will be continually tested, refined and extended based on new laboratory and clinical findings. For example, when only some patients with a molecular subtype respond to a drug, that subtype is split to differentiate responders and non-responders.

We're currently piloting a rapid learning initiative in lung cancer with Brian Druker's team at OHSU and Ravi Salgia at U. Chicago. The learning process will be driven by results presented in meetings and publications of organizations such as AACR, ASCO and CAP, as well as by discrepancies between current best practice and clinical outcomes reported by patients and their physicians. Participants will discuss these inputs and their implications for the models in moderated online forums, resulting in periodic updates. The MDM updates will be rapidly disseminated to affected patients and their physicians through alerts and clinical decision-support apps, as well as through peer-reviewed sources. Our editorial team will augment this content with breaking news, learning modules, and highlights from case studies, forums and other social networks – linking each item to relevant MDM subtypes and treatments.

Rapid Learning Communities will be hosted on Medbook, a secure Web-based social media and apps platform that is being developed in collaboration with David Haussler's group at UCSC. Unlike most social networks, Medbook discussions will be moderated, modular, structured, searchable, and context-based (e.g., linked from subtype callouts in the MDMs); and easily reached via PubMed and Google.

### Collaboration opportunities with Sage Commons

1. Experts in the Sage community can participate in the Cancer Commons discussion forums to debate issues, bring forward new data, and help keep the MDM up to date and actionable. Substantive issues that cannot be resolved through discussion can be posed as collaborative research challenges to the Sage community: why did this patient or group of patients respond and others didn't (or recurred?); what's different about their tumor's biology, and what therapy should be tried next?
2. Sage Commons can serve as a data repository for our partnering institutions. For instance, the OHSU/Chicago lung cancer pilot will utilize patient data from three sources: electronic medical records; physician case reports documenting "interesting" (i.e., unexpected) responses; and feedback from individual patients using the online apps. This data will help to quantify the expert recommendations in our MDMs (e.g., how many patients selected each therapy, and their response rates) so that cancer patients can see what worked best for patients like them. The data can also be made available, through Sage, to computational biologists so they can revise their pathway models, and to AI researchers so they can develop MDMs de novo. Discrepancies between these data-based models and the expert-curated MDMs will drive research. Our hope is that clinically actionable hypotheses will emerge that can be rapidly tested in small pilot studies within the Cancer Commons/Sage community, and that results from these studies will enable researchers to quickly refine their models of cancer biology and treatment.
3. Medbook can be integrated with Synapse to support the rapid translation of research findings to the clinic, and the rapid feedback of clinical results to the lab.
4. Finally, we're evaluating the use of John Wilbanks' Common (patient) Consent form and his proposed architecture for distributed patient registries.

We look forward to collaborating with Sage, and to reporting clinically actionable results at the 2013 Congress.