

Breakthrough heralds era of personalized cancer treatment

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(PhysOrg.com) -- Simon Fraser University molecular biologist Stephen Jones is among the researchers leading the charge to deliver personalized therapies tailored to the genetic makeup of individual cancers.

Jones and fellow SFU grad Marco Marra are part of the B.C. [Cancer Agency Genome Sciences Centre \(BCCA-GSC\)](#) team that recently cracked the genetic code of a rare tongue tumor that had metastasized.

The tumour's rarity meant that no established treatment options existed. Using advanced DNA sequencing techniques developed by Jones and other bioinformatics experts at the BCCA-GSC, the scientists discovered genetic changes that had accumulated in the tumour.

They then developed a personalized drug regime that stabilized the aggressive cancer for several months. The genetic sequencing enabled clinicians to differentiate the genes that were likely the driving factors specific to the tumour from those genes involved in normal cellular processes.

This work, described in the journal [Genome Biology](#), is the first published example of genome-scale DNA and RNA (similar to DNA) sequencing of a tumour to advance clinical decision-making and therapeutic choice.

“Utilizing a complete map of the molecular changes within a tumour in a clinical setting represents a world first in the application of this

technology,” says Jones, GSC associate director. “It ushers in the era of personalized medicine in oncology.”

While still in the preliminary stage, this approach is invaluable in attacking rare tumours, for which there are no established treatment protocols.

“The advancements in DNA sequencing and significant decreases in the cost of doing it are enabling us to contemplate using this technology in a clinical setting,” notes Marra, BCCA-GSC director.

Provided by Simon Fraser University

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