‘Stemness’ and the downside of limiting our definition of stem cells

As more sophisticated technology has revealed just how plastic and heterogeneous cell populations can be, some researchers have transitioned from viewing “stemness” as the defining trait of a [stem cell] to viewing it as a function many types of cells can perform or contribute to.

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[W]hen the stem cells in solid tissues are destroyed, more specialized cells in those tissues can often revert to a stemlike state to take over repair functions on their behalf.

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That’s been shown in a slew of organs, including the kidney, lung, stomach and intestine. Perhaps most striking, some tissues (beyond the heart) don’t seem to have a stem cell population. The adult liver — the epitome of efficient organ regeneration — has no stem cells; instead, its differentiated cells can act like stem cells when needed. “In essence,” [researcher Hans] Clevers said, “every cell in the liver has the potential to behave like a stem cell.”

And so, “it’s more useful to find out how a particular tissue performs its stem cell function than to identify individual stem cells,” he said. The way various cells all contribute to maintaining a tissue constitutes stemness — not any one cell type or entity. Sticking to the more dogmatic definition of what a “true” stem cell should be, instead of considering that they fall along a more nebulous spectrum, has hindered progress.

Read full, original post: What Defines a Stem Cell? Scientists Rethink the Answer