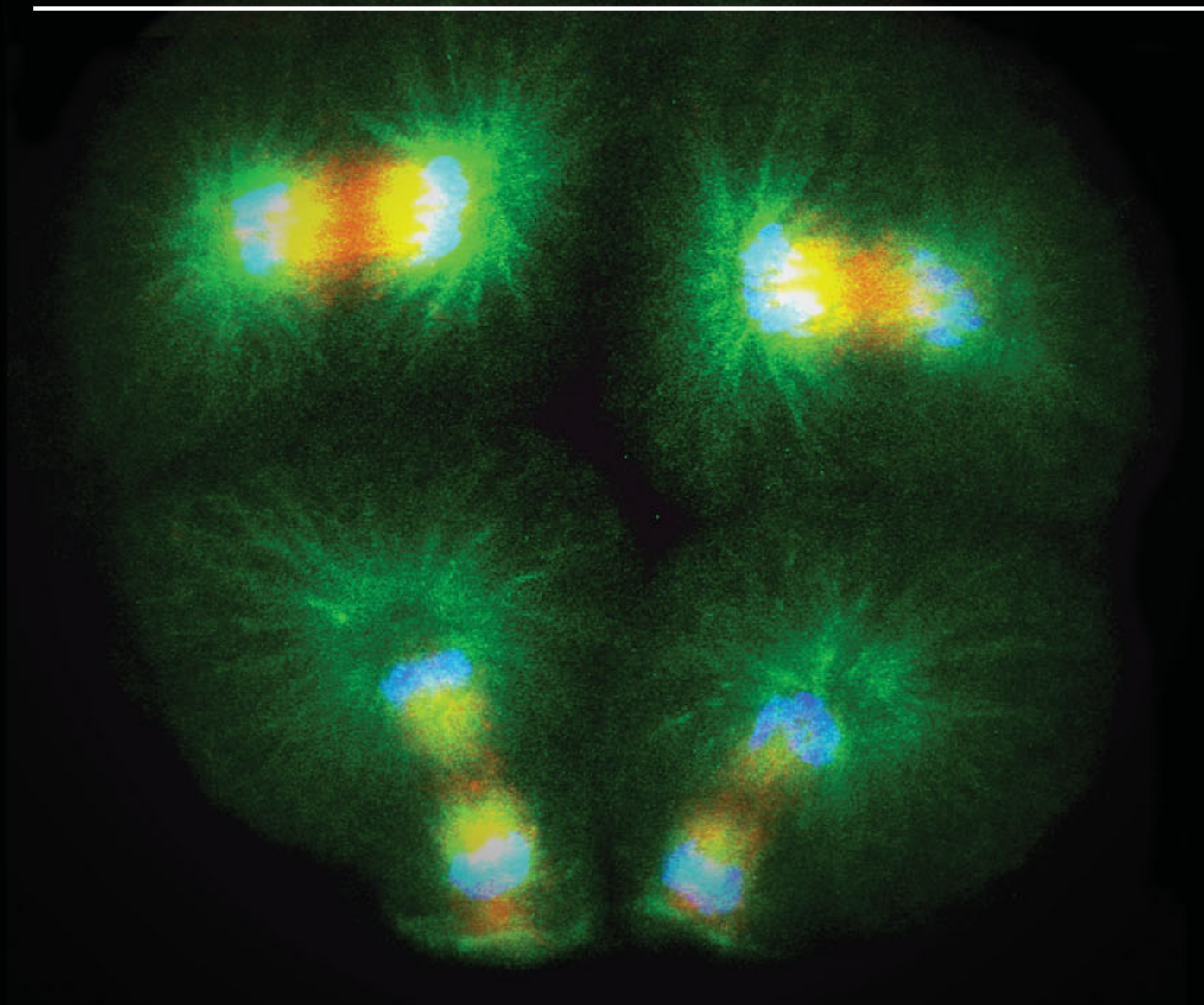

Embryonic cells of many organisms demonstrate multipotency, an ability to differentiate into multiple different cell types in response to intercellular and environmental cues. The sea urchin embryo is known for its strong regulative capability, which was first described by Hans Driesch in 1891 after observing that individual cells isolated from embryos could proceed through normal development, at least to the larval stage. Although the mechanisms of cell-fate determination in multipotent cells is yet to be understood, the conserved germ-line factor Vasa was recently found expressed not just in the germ line but also in the somatic lineages. Importantly, Vasa is required for many embryonic processes, including rapid cell-cycle progression, wound-healing, and developmental re-programming (Yajima and Wessel, 2011, doi: 10.1242/dev.065052; 2015, doi:10.1242/dev.118448). These findings imply that Vasa may directly regulate multipotency of embryonic cells in the sea urchin, perhaps through its translational mechanisms.

One example demonstrating the functional diversity of Vasa is shown in this 8-16-cell stage *Strongylocentrotus purpuratus* embryo. Vasa (red) is localized on the spindle complex (tubulin, green; DNA, blue) of every blastomere in a cell cycle-dependent manner. Vasa protein then becomes specifically enriched in the vegetal-most cells (bottom of image) – called the micromeres through this first asymmetric cell division at the 16-cell stage – and becomes subsequently restricted to their smaller daughter cells, which contribute to the germ line in adults.

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