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**ABOUT THE COVER**

Multivariate analysis and high-content imaging allow the detailed investigation of treatment effects at the cellular level, yet the reproducibility of such assessments has not been thoroughly investigated. A model calibrated at each experiment accounts for variation in experimental conditions and allows for the reproducible assessment of phenotype induced by cell cycle modulators. An extensive survey of cell cycle inhibitors highlights the prevalence of phenotypic variability in response to agents within a mechanistic class and the occurrence of concentration-dependent changes in phenotype. For details, see the article by Sutherland and colleagues on page 242.