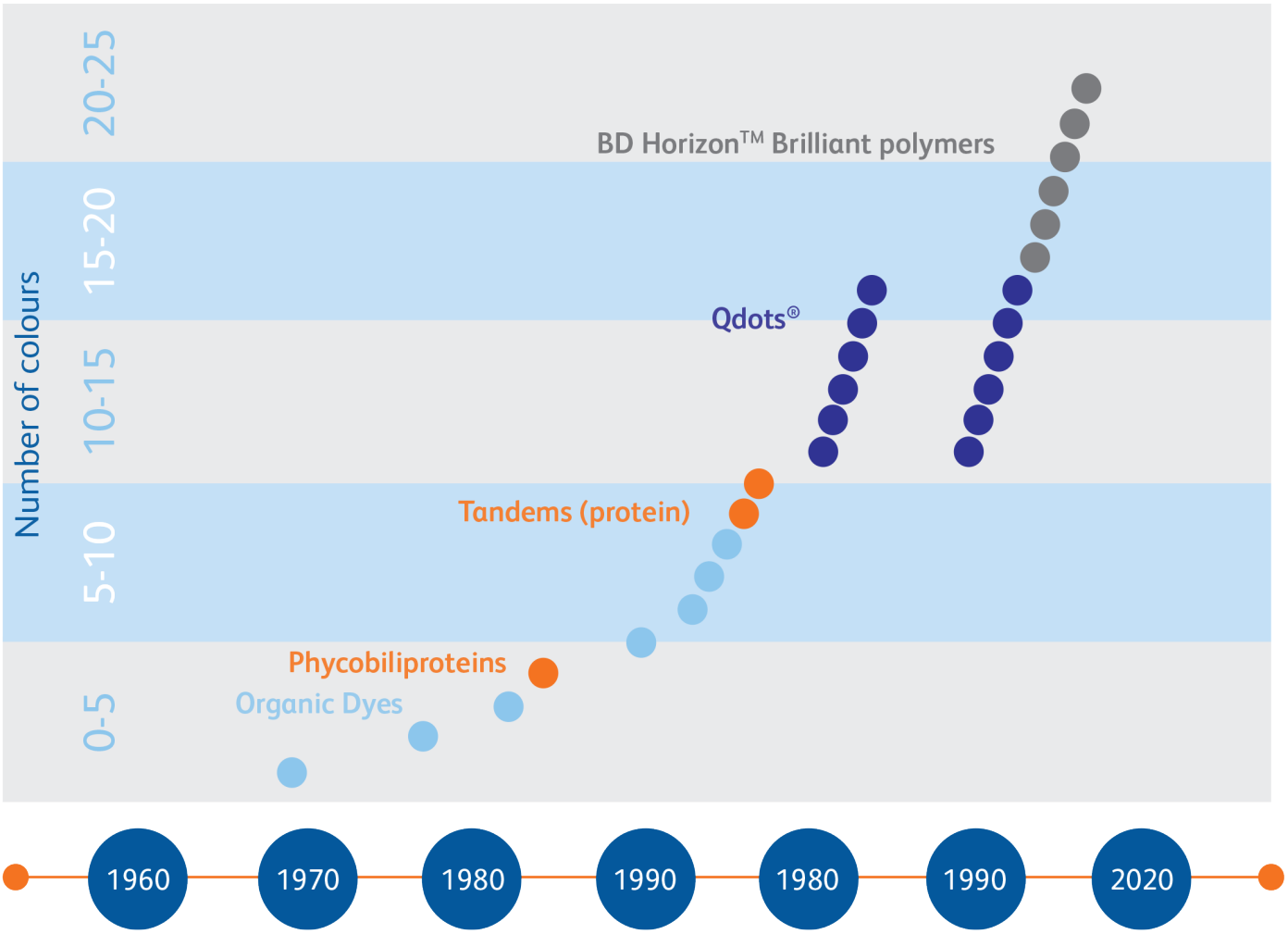
The flow cytometry dye timeline

How the dye, a vital component of flow cytometry, has evolved over the ages



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Early 1970s	Only two fluorescent dyes were available – Fluorescein and rhodamine.
Early 1980s	Phycobiliproteins like phycoerythrin (PE) and allophycocyanin (APC), extracted from cyanobacteria and algae, were developed by Vernon Oi, Alex Glazer and Lubert Stryer.
Late 1980s	The ability of PE to absorb and transfer energy to other fluorescent molecules was used to create tandem dyes (eg: PE-Texas Red, PE-Cy5, PE-Cy5.5, PE-Cy7).
1990s	APC-based tandem dyes synthesized. Alexa™ dyes, which are a large spectrally-resolved series of small organic dyes, became available. 8 - 11 colour polychromatic flow cytometry became possible.
Early 2000s	Introduction of fluorescent, semiconductor nanocrystals (quantum dots or Qdots™) enabled 18-colour flow-cytometry.
2011 and later	BD Horizon™ Brilliant violet and ultraviolet dyes have become available, which are developed using organic polymers. These dyes and their tandems provide additional bright options at a variety of wave-lengths and are more suitable for immunophenotyping than quantum dots overcoming the main issues Qdots™ were causing.

Sean C Bendall et.al, *Trends Immunol.* 2012 July ; 33(7): 323–332.

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