

# Broad Bioimage Benchmark Collection



Annotated biological image sets for testing and validation

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## LEGEND: KINDS OF GROUND TRUTH

- C** Counts
- F** Foreground/background
- O** Outlines of objects
- B** Biological labels
- X** Centroids

## Image sets

### Identification and segmentation

Accession	Description	Mode	Fields	Ground truth		
<a href="#">BBBC001</a>	Human HT29 colon-cancer cells	Fluorescent	6	<b>C</b>		
<a href="#">BBBC002</a>	<i>Drosophila</i> Kc167 cells	Fluorescent	50	<b>C</b>		
<a href="#">BBBC003</a>	Mouse embryos	DIC	15	<b>C</b>	<b>F</b>	
<a href="#">BBBC004</a>	Synthetic cells	Fluorescent	100	<b>C</b>	<b>F</b>	
<a href="#">BBBC005</a>	Synthetic cells	Fluorescent	19,200	<b>C</b>	<b>F</b>	
<a href="#">BBBC006</a>	Human U2OS cells (out of focus)	Fluorescent	52,224	<b>F</b>	<b>O</b>	
<a href="#">BBBC007</a>	<i>Drosophila</i> Kc167 cells	Fluorescent	16	<b>O</b>		
<a href="#">BBBC008</a>	Human HT29 colon-cancer cells	Fluorescent	12	<b>F</b>		
<a href="#">BBBC009</a>	Human red blood cells	DIC	5	<b>O</b>		
<a href="#">BBBC010</a>	<i>C. elegans</i> live/dead assay (uneven illumination)	Bright field and fluorescent	384	<b>F</b>	<b>O</b>	<b>B</b>
<a href="#">BBBC018</a>	Human HT29 colon-cancer cells (diverse phenotypes)	Fluorescent	55	<b>O</b>		
<a href="#">BBBC019</a>	Collective cell migration	DIC	126	<b>F</b>		
<a href="#">BBBC020</a>	Murine bone-marrow derived macrophages	Fluorescent	20	<b>O</b>		
<a href="#">BBBC024</a>	3D HL60 Cell Line (synthetic data)	Fluorescent	120	<b>F</b>	<b>C</b>	
<a href="#">BBBC025</a>	Human U2OS cells – RNAi Cell Painting experiment	Fluorescent	27,648	<b>B</b>		

## Identification and segmentation

Accession	Description	Mode	Fields	Ground truth			
<a href="#">BBBC026</a>	Human Hepatocyte and Murine Fibroblast cells – Co-culture experiment	Fluorescent	864	<b>B</b>	<b>C</b>		
<a href="#">BBBC027</a>	3D Colon Tissue (synthetic data)	Fluorescent	60	<b>F</b>	<b>C</b>		
<a href="#">BBBC028</a>	Polymerized structures	DIC	60	<b>F</b>			
<a href="#">BBBC029</a>	Synthetic DIC Images	DIC	218	<b>F</b>			
<a href="#">BBBC030</a>	Chinese Hamster Ovary Cells	DIC	60	<b>O</b>			
<a href="#">BBBC032</a>	Mouse embryo blastocyst cells	Fluorescent	1	<b>F</b>			
<a href="#">BBBC033</a>	Mouse trophoblast stem cells	Fluorescent	1	<b>F</b>			
<a href="#">BBBC034</a>	Induced pluripotent human stem cells	Bright field and fluorescent	2	<b>F</b>			
<a href="#">BBBC035</a>	Simulated HL60 cells (from the Cell Tracking Challenge)	Fluorescent	2	<b>F</b>			
<a href="#">BBBC038</a>	Kaggle 2018 Data Science Bowl	Fluorescent	735	<b>F</b>			
<a href="#">BBBC039</a>	Nuclei of U2OS cells in a chemical screen	Fluorescent	200	<b>F</b>	<b>B</b>	<b>O</b>	<b>C</b>
<a href="#">BBBC041</a>	P. vivax (malaria) infected human blood smears	Bright field	1364	<b>C</b>	<b>U</b>		
<a href="#">BBBC042</a>	Rat astrocyte cells	Bright field	1200	<b>B</b>			
<a href="#">BBBC044</a>	Mouse hippocampal presynaptic terminals (vGlut-1 and vGat)	Fluorescent	180	<b>C</b>			
<a href="#">BBBC045</a>	Human White Blood Cells	Bright field	1	<b>B</b>			

## Identification and segmentation

Accession	Description	Mode	Fields	Ground truth
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## Phenotype classification

Accession	Description	Mode	Fields	Ground truth
<a href="#">BBBC010</a>	<i>C. elegans</i> live/dead assay	Bright field and fluorescent	384	<b>F</b> <b>O</b> <b>B</b>
<a href="#">BBBC011</a>	<i>C. elegans</i> metabolism assay	Bright field and fluorescent	50	<b>B</b>
<a href="#">BBBC012</a>	<i>C. elegans</i> infection marker	Bright field and fluorescent	120	<b>B</b>
<a href="#">BBBC013</a>	Human U2OS cells cytoplasm–nucleus translocation	Fluorescent	96	<b>B</b>
<a href="#">BBBC014</a>	Human U2OS cells cytoplasm–nucleus translocation	Fluorescent	96	<b>B</b>
<a href="#">BBBC015</a>	Human U2OS cells transfluor	Fluorescent	144	<b>B</b>
<a href="#">BBBC016</a>	Human U2OS cells transfluor	Fluorescent	144	<b>B</b>
<a href="#">BBBC031</a>	Simulated 24-well plate with synthetic cells	Fluorescent	216	<b>C</b> <b>X</b> <b>B</b>
<a href="#">BBBC041</a>	<i>P. vivax</i> (malaria) infected human blood smears	Bright field	1364	<b>C</b> <b>U</b>

## Complete high-throughput experiments without ground truth

Accession	Description	Mode	Fields	Ground truth
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## Identification and segmentation

Accession	Description	Mode	Fields	Ground truth
<a href="#">BBBC017</a>	Human HT29 colon-cancer cells shRNAi screen	Fluorescent	64,512	
<a href="#">BBBC022</a>	Human U2OS cells – compound-profiling Cell Painting experiment	Fluorescent	69,120	<a href="#">B</a>

## Image-based Profiling

Accession	Description	Mode	Fields	Ground truth
<a href="#">BBBC021</a>	Human MCF7 cells – compound-profiling experiment	Fluorescent	13,200	<a href="#">B</a>
<a href="#">BBBC036</a>	Human U2OS Cells – profiling bioactive compounds using Cell Painting	Fluorescent	6	<a href="#">B</a>
<a href="#">BBBC037</a>	Human U2OS cells - Gene overexpression profiling experiment	Fluorescent	9	<a href="#">B</a>