



# Application note: Compatible media

## Summary

Nr.	Medium (supplier)	Increase in cell yield*	Average viability	Morphology
1	StemPro™ MSC SFM (Gibco)	10%	97 %	
2	Mesenchymal Stem Cell Growth Medium DXF (PromoCell)	50%	99 %	
3	PRIME-XV MSC Expansion XSFM (Irvine Scientific)	34%	98 %	
4	Cellovations MSC Cell growth media (PELOBiotech)	33%	93 %	
5	StemMACS MSC medium (Miltenyi Biotec)	40%	88 %	
6	PLSolution+PLSupplement (PLBioScience)	50%	92 %	
	PLSolution-FD (fibrinogen-depleted; PLBioScience)	30%	95 %	
7	NutriStem XF (Biological Industries)	10%	96 %	

\*Compared to recommended coating or best performing competitor.

## Purpose

- Testing the compatibility and performance of myMATRIX MSC with various types of media from different manufacturers

## Cultivation conditions

- Cells human bone marrow-derived mesenchymal stromal cells (hBM-MSCs)
- Starting cell passage 2 - 6
- Seeding density 4.000 - 5.000 cells/cm<sup>2</sup>
- Control medium 1 StemPro MSC SFM
- Control medium 2 DMEM, low glucose, GlutaMAX, pyruvate + 10% FCS
- Cells were cultured for 3 consecutive passages (3 - 5 days each) in T-25 flasks in the following conditions:
  - myMATRIX MSC + test medium
  - myMATRIX MSC + control medium 1
  - Fibronectin/recommended surface + test medium
  - tissue culture treated plastic (TCT) + test medium
  - tissue culture treated plastic (TCT) + control medium 1
  - tissue culture treated plastic (TCT) + control medium 2

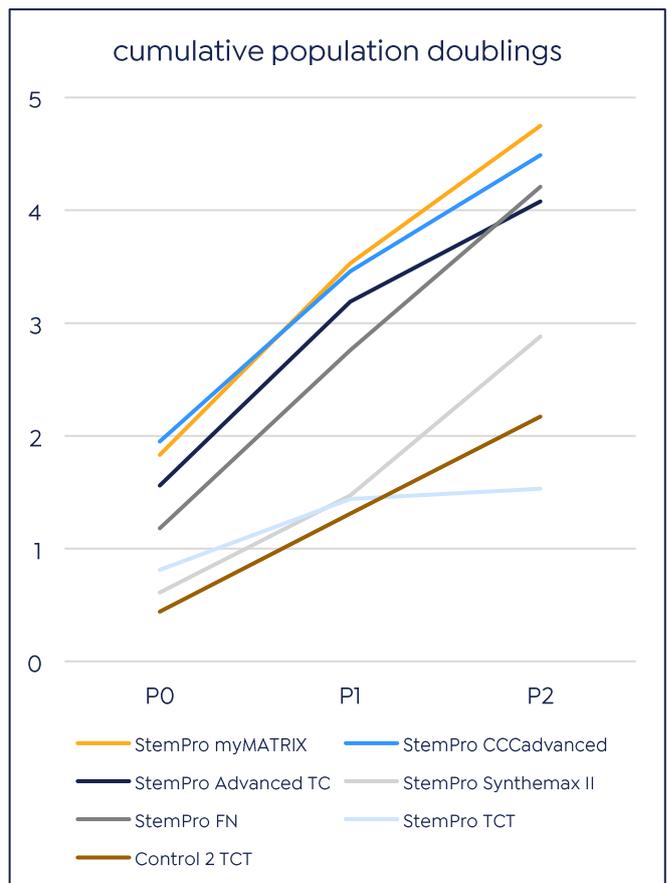
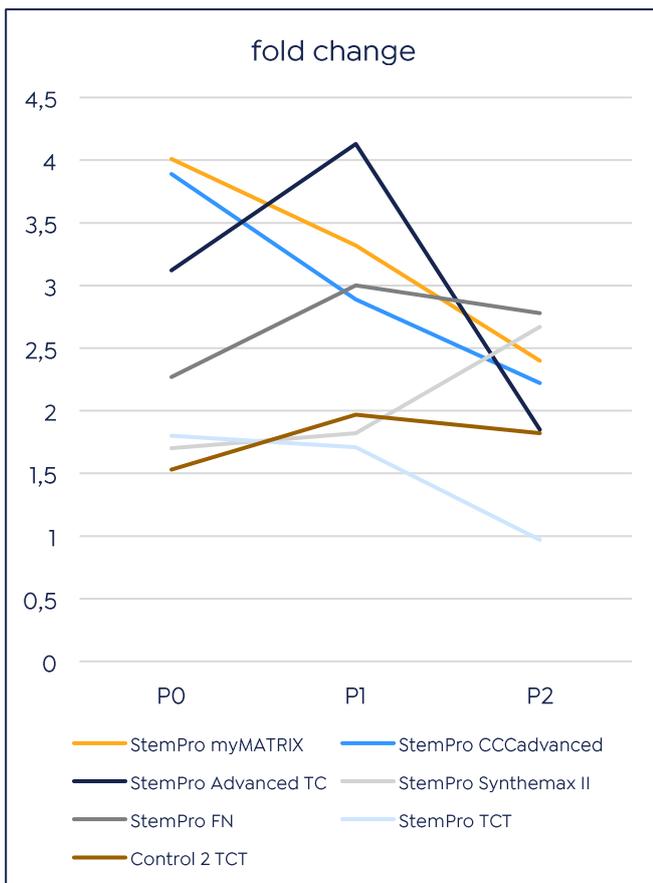
## Results

- After each passage:
  - cell count and viability were measured using EVE Automated Cell Counter (NanoEnTek)
  - phase contrast images were taken with Lionheart FX automated microscope (BioTek)
  - cumulative population doubling (CPD) was calculated

# 1. StemPro™ MSC SFM (Gibco, A1033201)

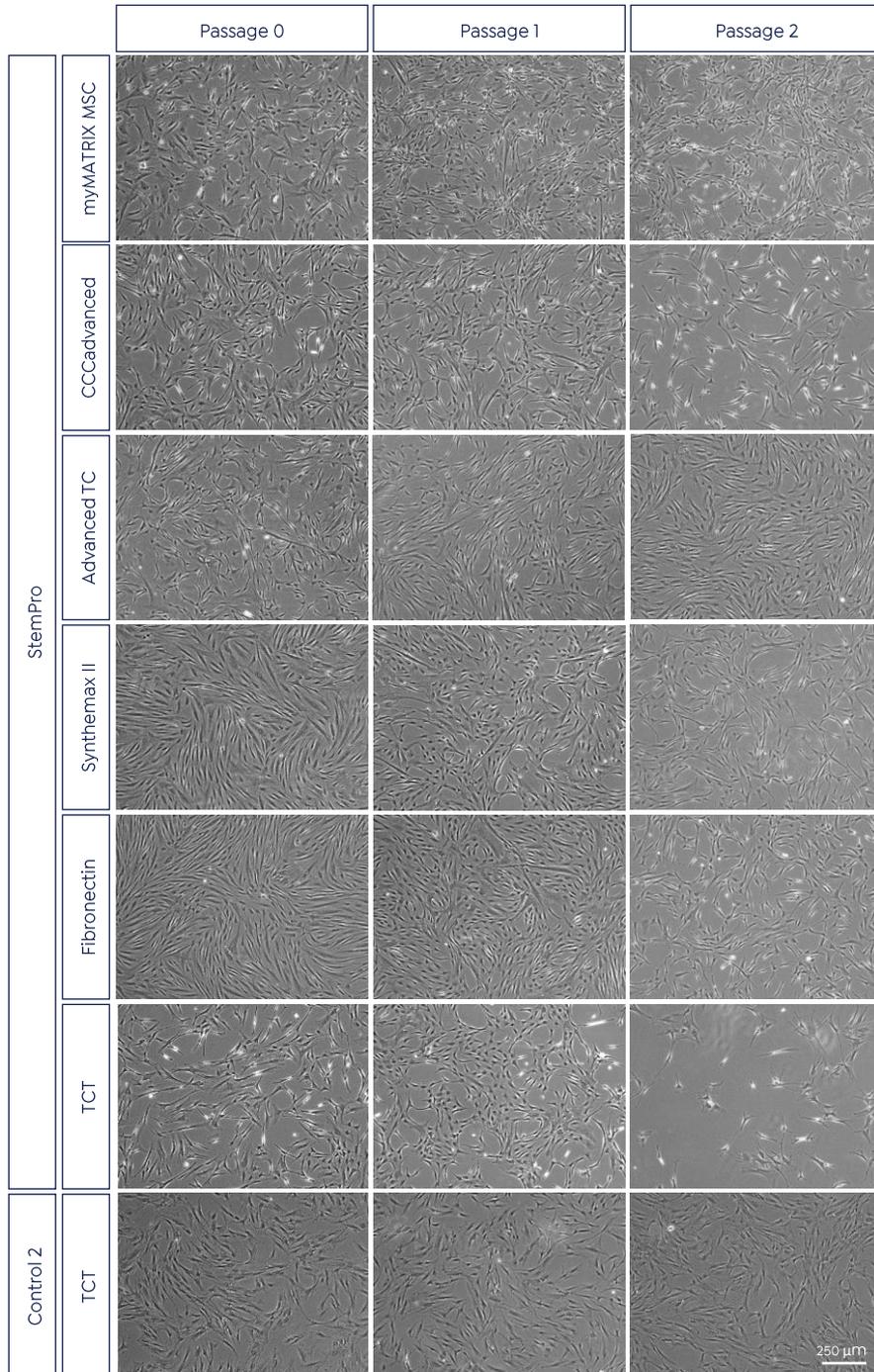
## 1.1 Fold change, viability (%) and average fold change

Coating	Medium	Passage 0		Passage 1		Passage 2		Average fold change	
		Fold change	Viability	Fold change	Viability	Fold change	Viability		
myMATRIX MSC	StemPro (Control 1)	4.0	95	3.3	98	2.4	97	3.2	
CCCadvanced®		3.9	94	2.9	96	2.2	93	3.0	
Advanced TC		3.1	99	4.1	97	1.9	93	3.0	
Synthemax® II		1.7	82	1.9	92	2.7	96	2.1	
Fibronectin		2.3	92	3.0	92	2.8	93	2.7	
TCT			1.8	93	1.7	95	1.0	88	1.5
		Control 2	1.5	91	2.0	89	1.8	94	1.8



# 1. StemPro™ MSC SFM (Gibco, A1033201)

## 1.2 Phase contrast images

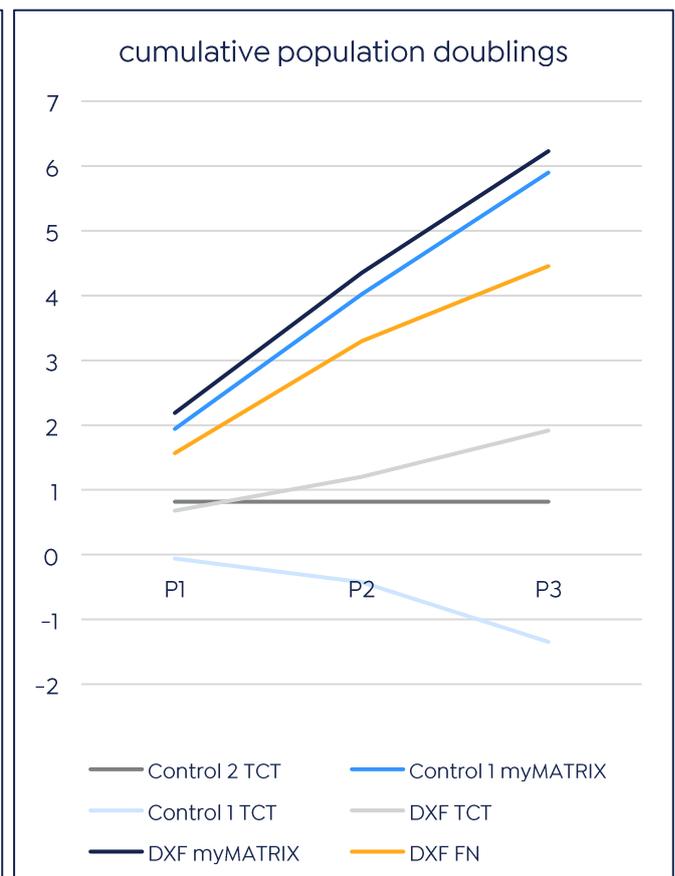
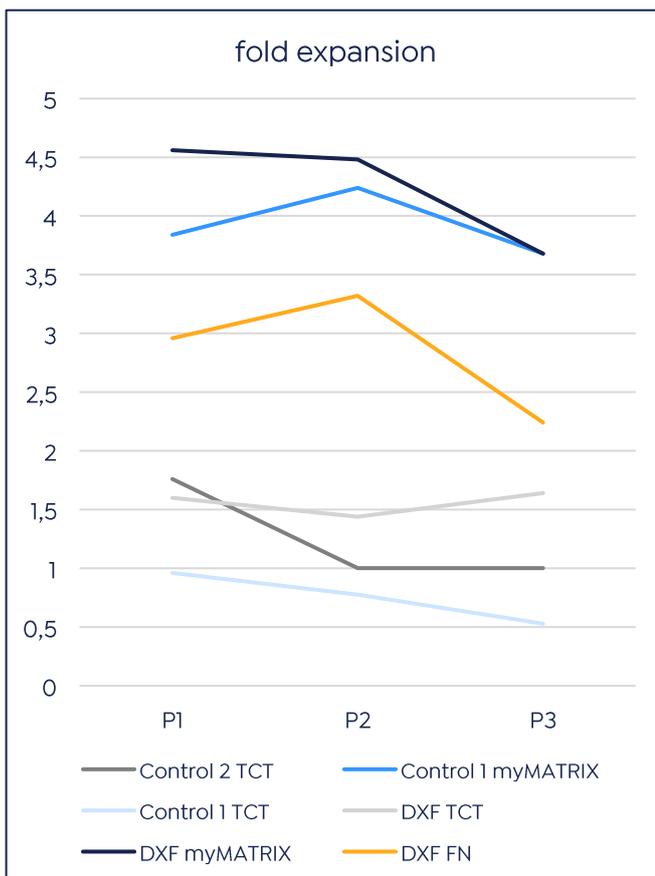


- **Best performance on myMATRIX MSC: highest proliferation rate and viability in combination with StemPro MSC SFM medium**

## 2. Mesenchymal Stem Cell Growth Medium DXF (PromoCell, C-28019)

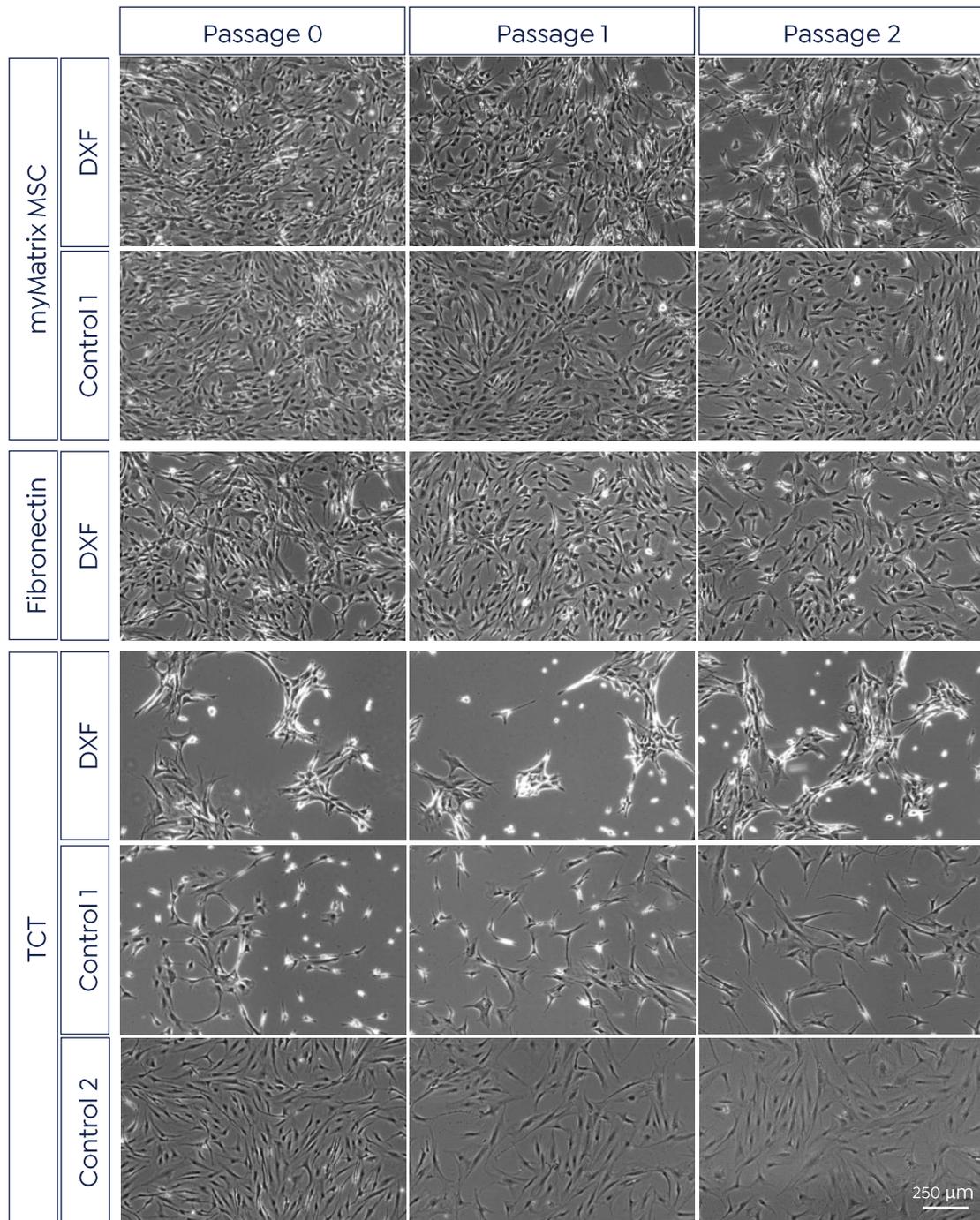
### 2.1 Cell count ( $\times 10^5$ ), viability (%) and average cell yield ( $\times 10^5$ )

Coating	Medium	Passage 0		Passage 1		Passage 2		Average cell yield
		Cell count	Viability	Cell count	Viability	Cell count	Viability	
myMATRIX MSC	DXF	5.7	99	5.6	99	4.6	99	5.3
	Control 1	4.8	97	5.3	97	4.6	93	4.9
Fibronectin	DXF	3.7	96	4.2	97	2.8	98	3.6
TCT	DXF	2.0	94	1.8	97	2.1	95	2.0
	Control 1	1.2	91	1.0	85	0.7	85	0.9
	Control 2	2.2	96	1.3	94	1.3	94	1.6



## 2. Mesenchymal Stem Cell Growth Medium DXF (PromoCell, C-28019)

### 2.2 Phase contrast images

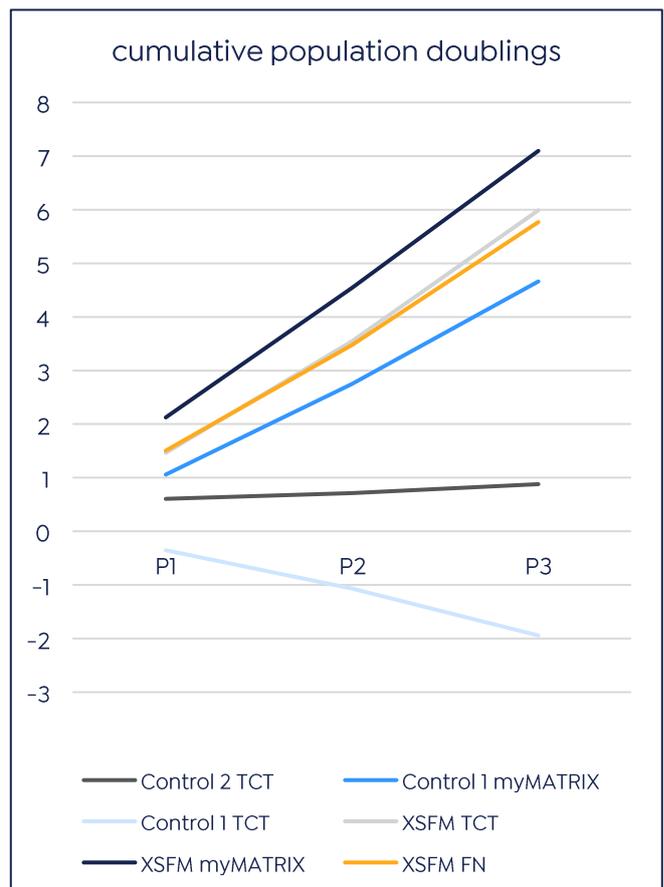
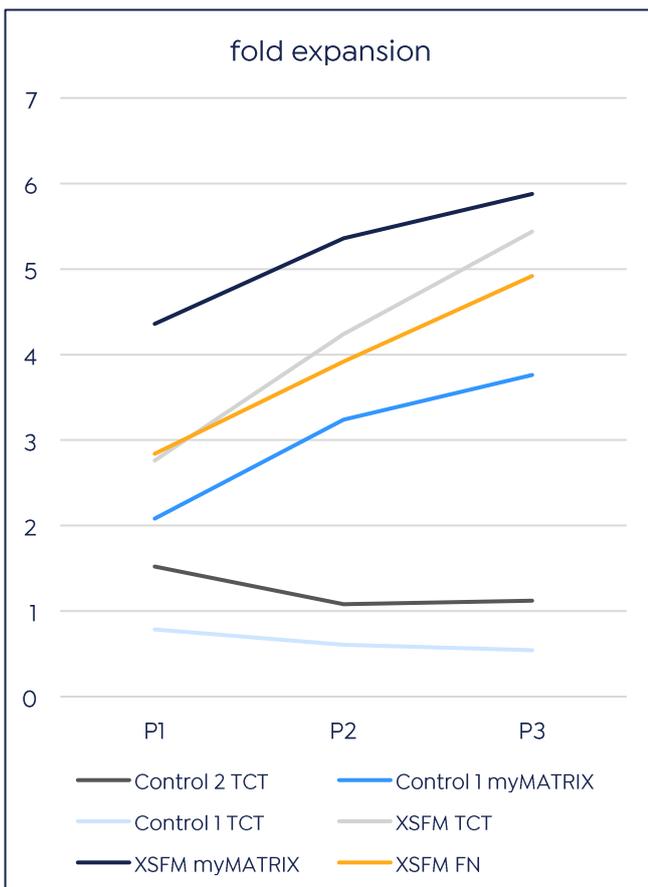


- **Best performance on myMATRIX MSC: highest proliferation rate and viability in combination with DXF medium**

# 3. PRIME-XV MSC Expansion XFSM (Irvine Scientific, 91149)

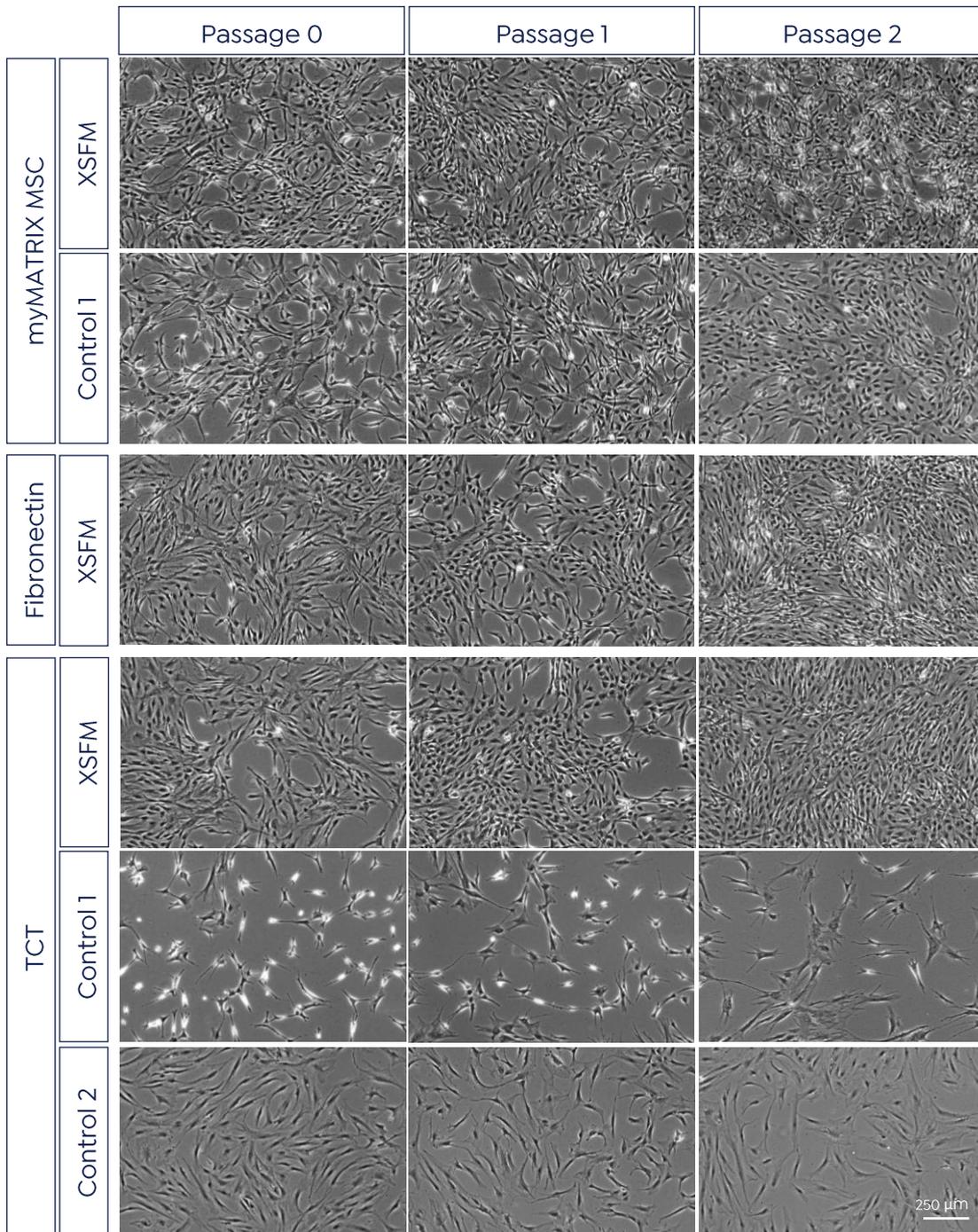
## 3.1 Cell count (x10<sup>5</sup>), viability (%) and average cell yield (x10<sup>5</sup>)

Coating	Medium	Passage 0		Passage 1		Passage 2		Average cell yield
		Cell count	Viability	Cell count	Viability	Cell count	Viability	
myMATRIX MSC	XFSM	5.5	98	6.7	98	7.4	98	6.5
	Control 1	2.6	92	4.1	96	4.7	96	3.8
Fibronectin	XFSM	3.6	98	4.9	98	6.2	97	4.9
TCT	XFSM	3.5	96	5.3	96	6.8	97	5.2
	Control 1	1.0	90	0.8	91	0.7	89	0.8
	Control 2	1.9	97	1.4	99	1.4	98	1.6



### 3. PRIME-XV MSC Expansion XSFM (Irvine Scientific, 91149)

#### 3.2 Phase contrast images

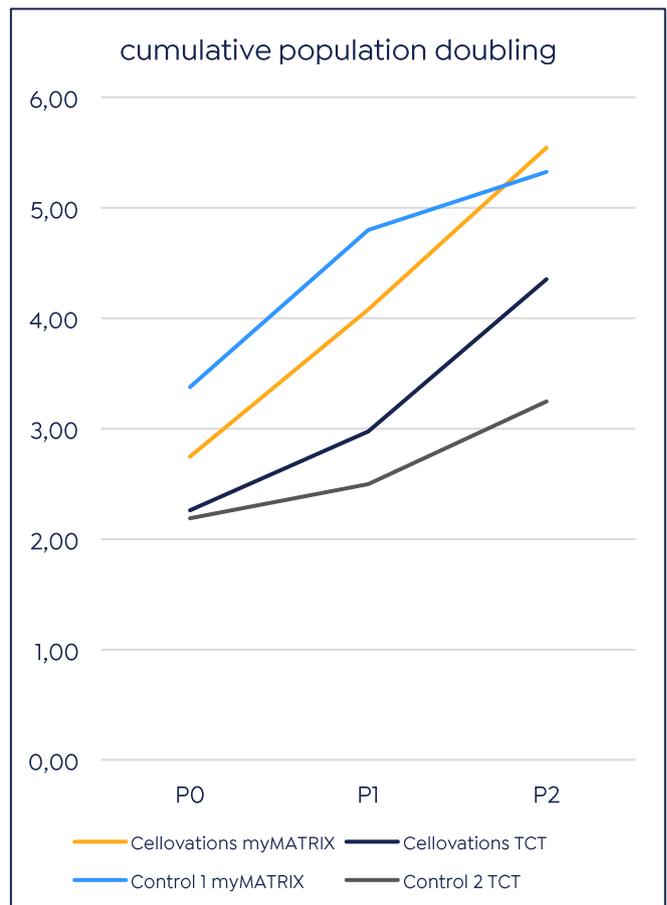
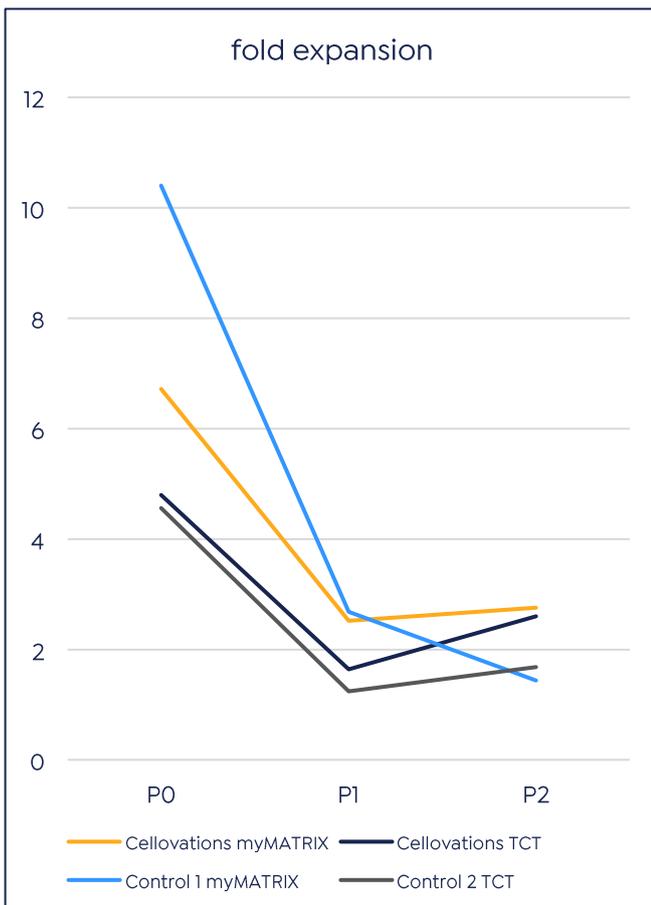


- Best performance on myMATRIX MSC: highest proliferation rate and viability in combination with XSFM medium

# 4. Cellovations MSC Cell Growth Media (PELOBiotech, PB-C-MH-675-0511-XF)

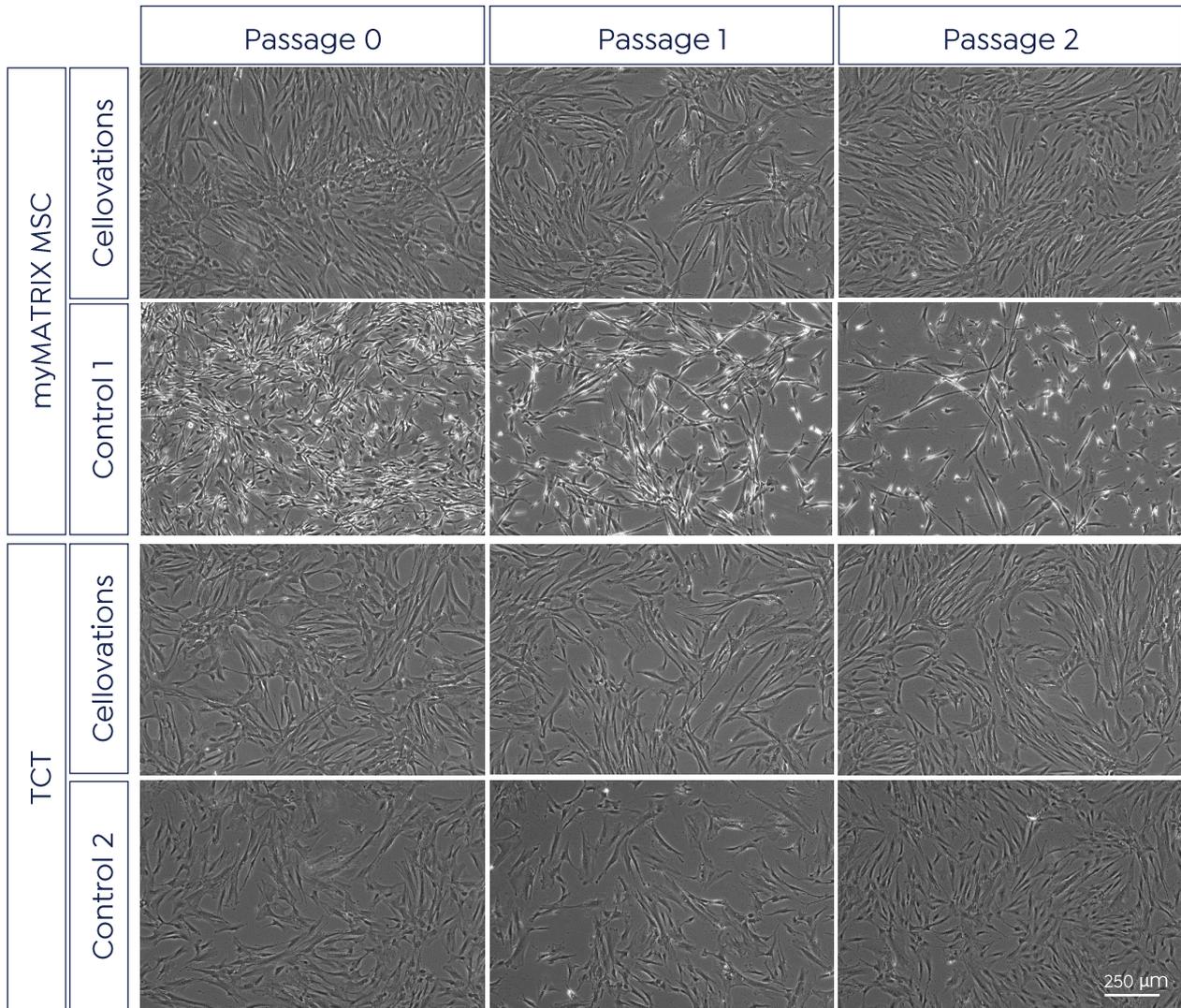
## 4.1 Cell count ( $\times 10^5$ ), viability (%) and average cell yield ( $\times 10^5$ )

Coating	Medium	Passage 0		Passage 1		Passage 2		Average cell yield
		Cell count	Viability	Cell count	Viability	Cell count	Viability	
myMATRIX MSC	Cellovations	8.4	90	3.2	92	3.5	97	5.0
	Control 1	13.0	93	3.4	87	1.8	93	6.1
TCT	Cellovations	6.0	93	2.1	87	3.3	98	3.8
	Control 2	5.7	69	1.6	84	2.1	96	3.1



## 4. Cellovations MSC Cell Growth Media (PELOBiotech, PB-C-MH-675-0511-XF)

### 4.2 Phase contrast images

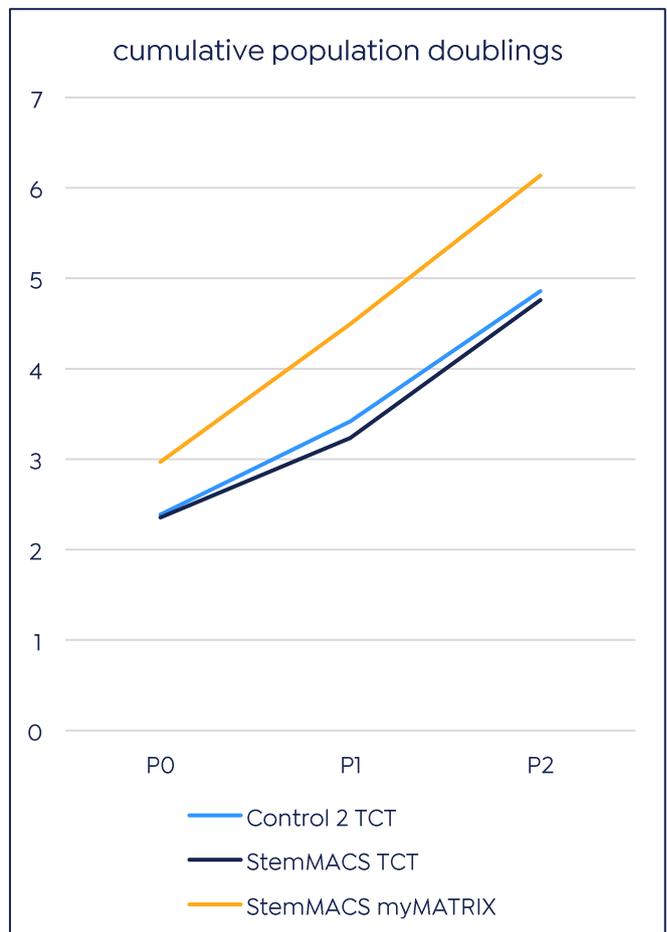
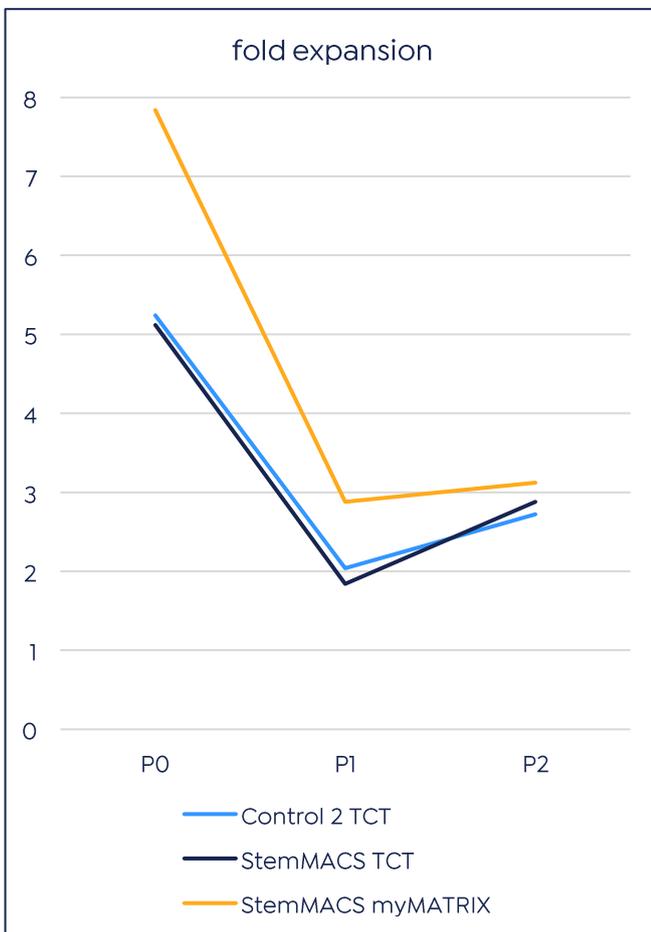


- **Best performance on myMATRIX MSC: highest proliferation rate and very high viability in combination with Cellovations medium**

# 5. StemMACS™ MSC Expansion Media, human (Miltenyi Biotec, 130-091-680)

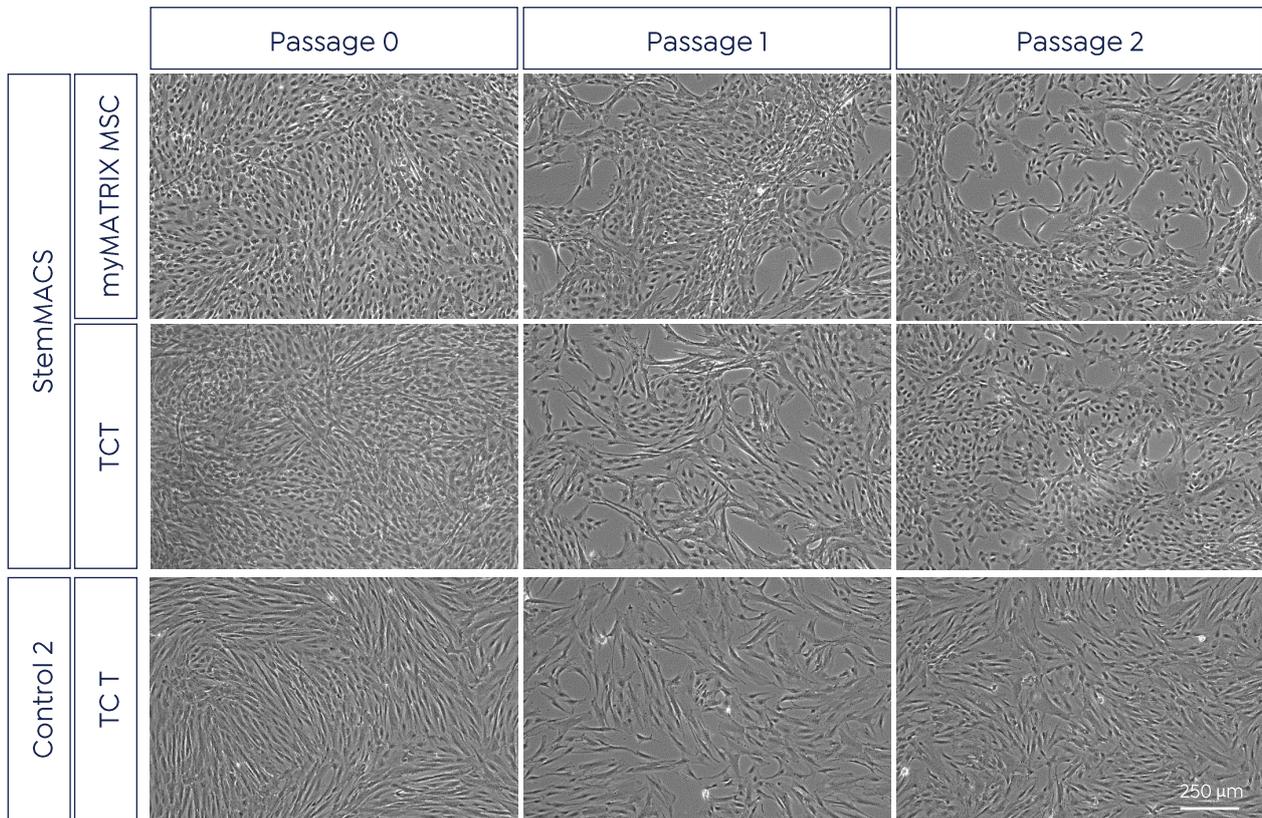
## 5.1 Cell count (x10<sup>5</sup>), viability (%) and average cell yield (x10<sup>5</sup>)

Coating	Medium	Passage 0		Passage 1		Passage 2		Average cell yield
		Cell count	Viability	Cell count	Viability	Cell count	Viability	
myMATRIX MSC	StemMACS	9.8	84	3.6	90	3.9	91	5.8
TCT	StemMACS	6.4	74	2.3	89	3.6	96	4.1
	Control 2	6.6	74	2.6	97	3.4	96	4.2



## 5. StemMACS™ MSC Expansion Media, human (Miltenyi Biotec, 130-091-680)

### 5.2 Phase contrast images

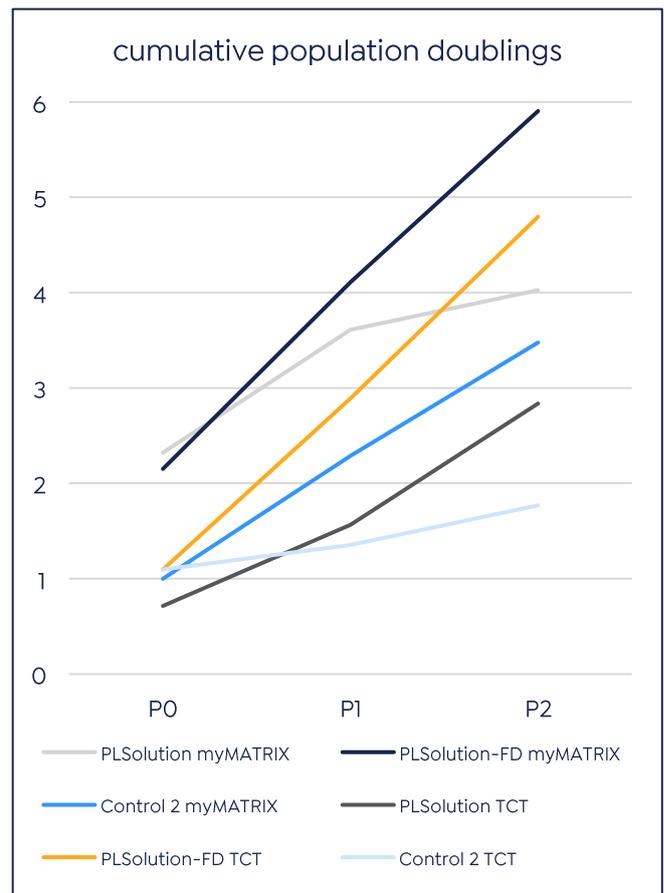
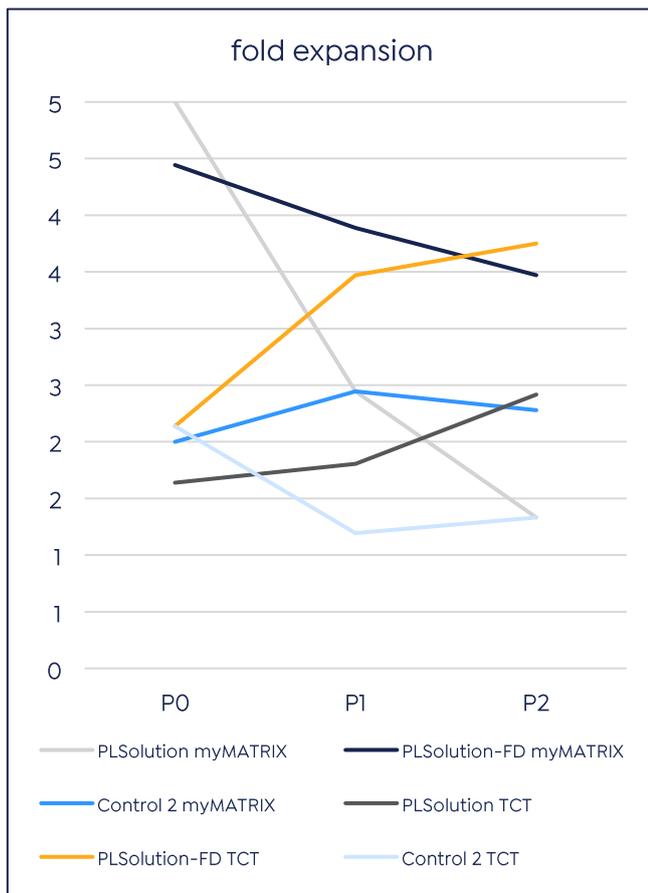


- **Best performance on myMATRIX MSC: highest proliferation rate and high viability in combination with StemMACS MSC medium**

# 6. PLSolution and PLSolution-FD (fibrinogen-depleted) (PLBioScience)

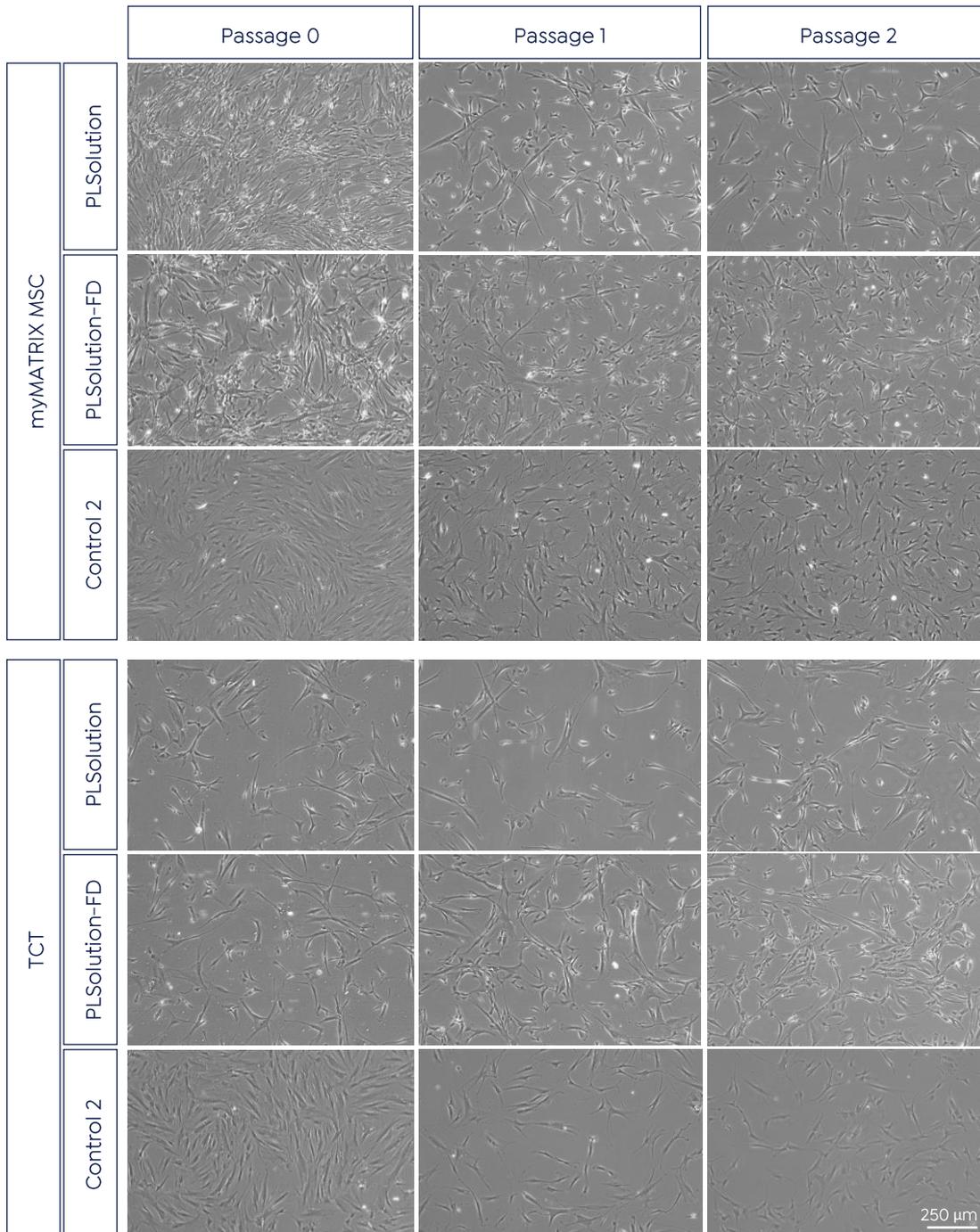
## 6.1 Cell count (x10<sup>5</sup>), viability (%) and average cell yield (x10<sup>5</sup>)

Coating	Medium	Passage 0		Passage 1		Passage 2		Average cell yield
		Cell count	Viability	Cell count	Viability	Cell count	Viability	
myMATRIX MSC	PLSolution	1.8	97	0.9	87	0.5	91	3.2
	PLSolution-FD	1.6	96	1.4	95	1.3	93	4.3
	Control 2	0.7	93	0.9	88	0.8	91	2.4
TCT	PLSolution	0.6	77	0.7	84	0.9	86	2.1
	PLSolution-FD	0.8	92	1.3	91	1.4	92	3.4
	Control 2	0.8	86	0.4	70	0.5	73	1.7



## 6. PLSolution and PLSolution-FD (fibrinogen-depleted) (PLBioScience)

### 6.2 Phase contrast images

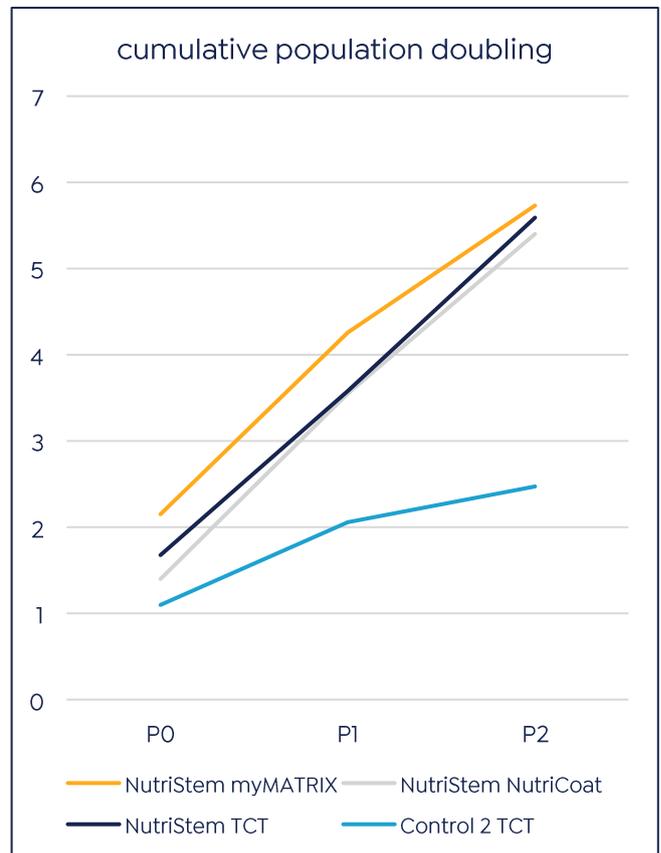
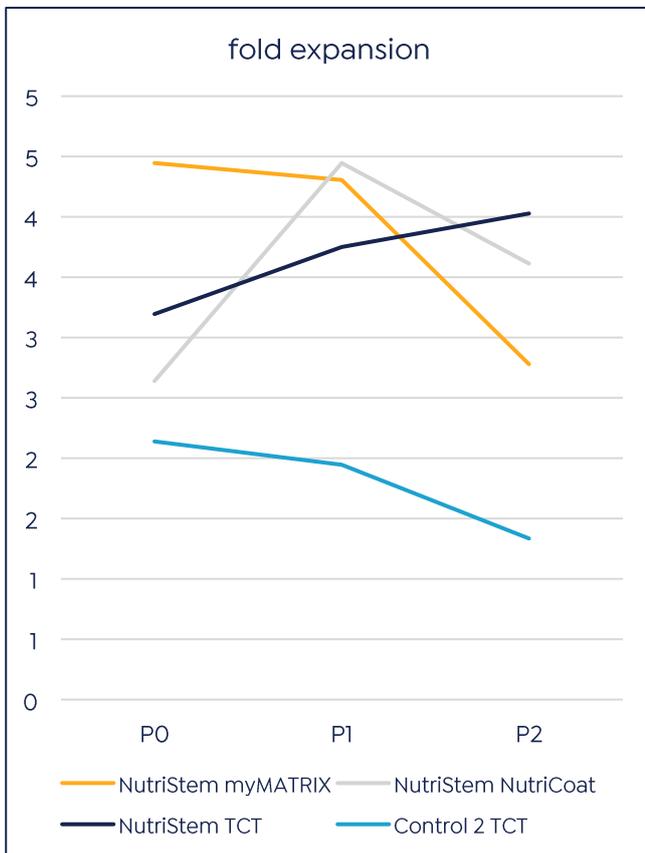


- **Best performance on myMATRIX MSC: highest proliferation rate and viability in combination with PLSolution and PLSolution-FD medium**

# 7. NutriStem XF (Biological Industries, 05-200-1)

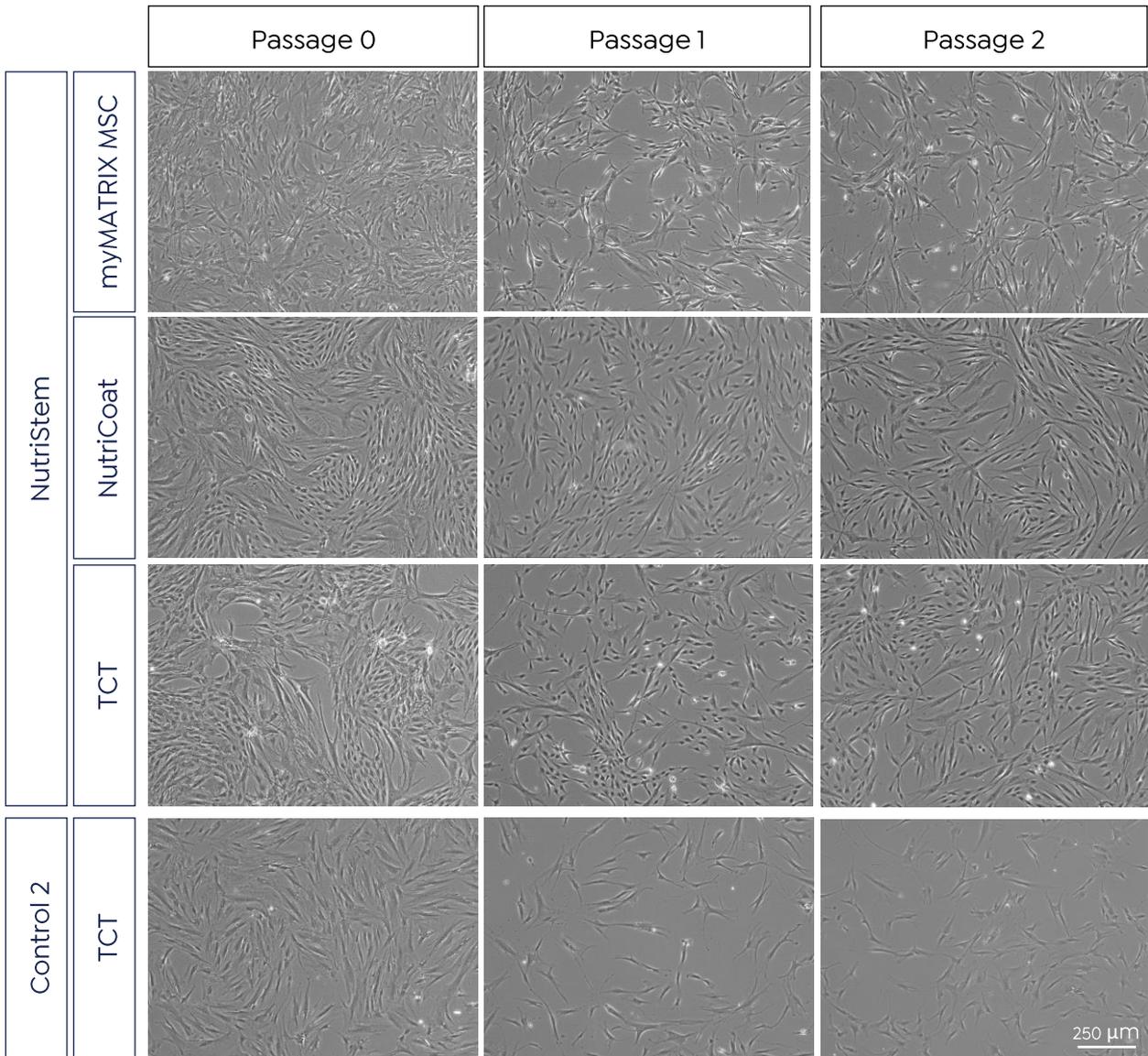
## 7.1 Cell count (x10<sup>5</sup>), viability (%) and average cell yield (x10<sup>5</sup>)

Coating	Medium	Passage 0		Passage 1		Passage 2		Average cell yield
		Cell count	Viability	Cell count	Viability	Cell count	Viability	
myMATRIX MSC	NutriStem	1.6	96	1.6	96	1.0	95	1.4
NutriCoat	NutriStem	1.0	90	1.6	95	1.3	95	1.3
TCT	Nutristem	1.2	92	1.4	91	1.5	94	1.3
	Control 2	0.8	86	0.7	70	0.5	73	0.7



# 7. NutriStem XF (Biological Industries, 05-200-1)

## 7.2 Phase contrast images



➤ Comparable high performance and viability on myMATRIX MSC to recommended coating using NutriStem XF medium