

**gibco**

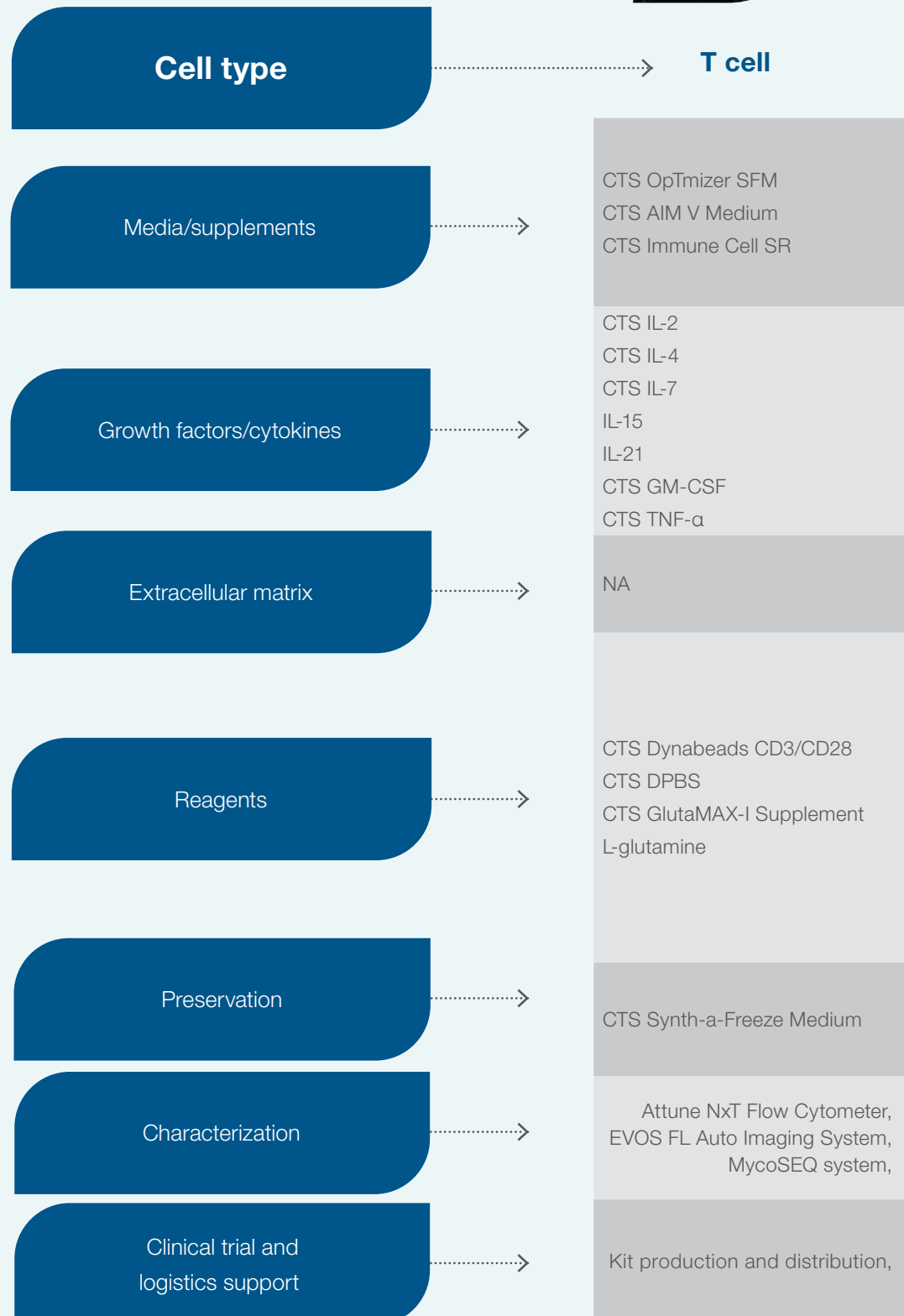
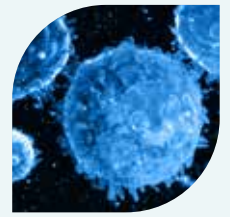


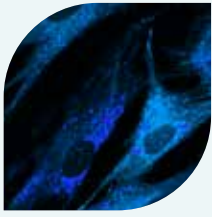
Cell therapy research—  
product selection guide

**ThermoFisher**  
SCIENTIFIC

# Workflow solutions

## Product selection guide





**MSC**



**PSC**



**NSC**



**HSC**

<p>CTS StemPro MSC SFM StemPro MSC SFM Xeno-free MesenPRO RS Medium</p>	<p>Essential 8 Medium CTS KnockOut SR Xeno-free Medium CTS KnockOut DMEM</p>	<p>CTS B-27 Xeno-free Supplement CTS KnockOut DMEM/F-12 CTS N-2 Supplement CultureOne Supplement</p>	<p>StemPro-34 SFM</p>
<p>CTS FGF-Basic CTS TGF-<math>\beta</math>1</p>	<p>CTS FGF-Basic CTS TGF-<math>\beta</math>1 CTS SCF CTS FLT3 ligand BMP-4 EGF Activin A</p>	<p>CTS FGF-Basic EGF</p>	<p>CTS IL-2, IL-3, CTS IL-4, IL-5, CTS IL-6, CTS IL-7, CTS SCF, CTS GM-CSF, CTS FLT3 ligand, TPO, M-CSF</p>
<p>CTS CELLstart Substrate</p>	<p>CTS Vitronectin CTS CELLstart Substrate rh-Laminin 521</p>	<p>CTS CELLstart Substrate</p>	<p>NA</p>
<p>L-glutamine StemPro Osteogenesis Differentiation Kit StemPro Chondrogenesis Differentiation Kit StemPro Adipogenesis Differentiation Kit CTS DPBS CTS GlutaMAX-I Supplement CTS TrypLE Select Enzyme</p>	<p>CTS CytoTune-iPS 2.1 Sendai Reprogramming Kit PSC Cardiomyocyte Differentiation Kit PSC Dopaminergic Neuron Differentiation Kit PSC Definitive Endoderm Induction Kit CTS DPBS CTS GlutaMAX-I Supplement CTS TrypLE Select Enzyme</p>	<p>CTS DPBS CTS GlutaMAX-I Supplement CTS TrypLE Select Enzyme</p>	<p>Dynabeads CD34 Positive Isolation Kit CTS DPBS CTS GlutaMAX-I Supplement</p>
<p>CTS Synth-a-Freeze Medium</p>	<p>CTS Synth-a-Freeze Medium PSC Cryopreservation Kit</p>	<p>CTS Synth-a-Freeze Medium</p>	<p>CTS Synth-a-Freeze Medium</p>

ELISA kits, Luminex assays, next-generation sequencing systems, qPCR and digital PCR instruments, Countess II FL Automated Cell Counter, CellInsight CX7 High-Content Analysis Platform, PluriTest™ assay-compatible PrimeView global gene expression profiling arrays, KaryoStat and KaryoStat HD assays, TaqMan hPSC Scorecard assay

secondary packaging and labeling, storage and monitoring, cold chain distribution and tracking

## Ordering information

Cell type					Category*	Product	Product description	Quantity	Cat. No.
T cell	MSC	PSC	NSC	HSC					
<b>Media and supplements</b>									
■					Xeno-free	CTS OpTmizer T Cell Expansion SFM <sup>†</sup>	Serum-free medium (SFM) developed for the growth and expansion of human T lymphocytes.	1 L (bottle) 1 L (bag)	A1048501 A1048503
■					Serum-free	CTS AIM V Medium <sup>†</sup>	Serum-free formulation for proliferation and manipulation of T cells and dendritic cells; manufactured in compliance with cGMP.	1 L 10 L	870112DK 870112BK
■					Xeno-free	CTS Immune Cell SR**	Xeno-free serum replacement for cell and tissue culture of clinical samples. The product is for <i>in vitro</i> diagnostic use.	50 mL 500 mL	A2596101 A2596102
	■				Serum-free	CTS StemPro MSC SFM <sup>†</sup>	Serum-free medium specially formulated for the growth and expansion of human mesenchymal stem cells (MSCs).	500 mL	A1033201
	■				Xeno-free	StemPro MSC SFM Xeno-free <sup>††</sup>	Serum-free medium for the growth and expansion of MSCs under completely serum-free and xeno-free conditions.	500 mL	A1067501
	■				NA	MesenPRO RS Medium	Reduced-serum (2%) medium specifically formulated to support the growth of human MSCs.	1 kit	12746012
				■	Serum-free	StemPro-34 SFM <sup>††</sup>	Serum-free medium specifically formulated to support the development of human hematopoietic stem cells (HSCs) in culture.	500 mL	10639011
		■			Xeno-free	CTS KnockOut SR Xeno-free Medium <sup>†</sup>	Enables the growth and expansion of human embryonic stem cells (ESCs) and human induced pluripotent stem cells (iPSCs) in a cell culture medium containing only human-derived or human recombinant proteins.	100 mL 500 mL	12618012 12618013
		■			Chemically defined	CTS KnockOut DMEM <sup>†</sup>	A basal medium optimized for the growth of undifferentiated human embryonic and induced pluripotent stem cells.	500 mL	A1286101
		■			Xeno-free	Essential 8 Medium <sup>††</sup>	A xeno-free and feeder-free medium specially formulated for the growth and expansion of human pluripotent stem cells.	500 mL	A1517001
			■		Xeno-free	CTS B-27 Supplement, Xeno-free <sup>§</sup>	Used to support induction of human neural stem cells (hNSCs) from pluripotent stem cells (PSCs), expansion of hNSCs, differentiation of hNSCs, and maintenance of mature differentiated neurons in culture.	10 mL	A1486701
			■		Chemically defined	CTS KnockOut DMEM/F-12 <sup>‡</sup>	A serum-free, low-osmolality medium without L-glutamine or HEPES buffer that is optimized for the growth of human embryonic stem cells and induced pluripotent stem cells.	500 mL	A1370801
			■		Serum-free	CTS N-2 Supplement <sup>‡</sup>	A serum-free supplement for the growth and expression of postmitotic neurons and tumor cells of neuronal phenotype.	5 mL	A1370701
			■		Serum-free	CTS Neurobasal Medium <sup>‡</sup>	A serum-free basal medium for the long-term viability of prenatal and embryonic hippocampal neurons and other neurons of the CNS.	500 mL	A1371201
			■		Serum-free	CTS Neurobasal-A Medium <sup>‡</sup>	A serum-free basal medium for the long-term viability of postnatal neurons, adult hippocampal neurons, and other neurons of the CNS.	500 mL	A1371001
			■		Xeno-free	CultureOne Supplement <sup>††</sup>	A xeno-free supplement developed to help eliminate more than 75% of contaminating neural progenitor cells to enable improved downstream assays, accelerated neuronal maturation, and seamless maintenance.	5 mL	A3320201

## Ordering information

Cell type					Category*	Product	Product description	Quantity	Cat. No.
T cell	MSC	PSC	NSC	HSC					
<b>Growth factors and cytokines</b>									
■				■	Animal origin-free	CTS IL-2 Recombinant Human Protein <sup>†</sup>	IL-2 causes proliferation of T cells and is a central regulator of immune responses.	100 µg 1 mg	CTP0021 CTP0023
				■	Animal origin-free	IL-3 Recombinant Human Protein <sup>‡</sup>	IL-3 provides the cytokine connection between the immune system and the hematopoietic system.	100 µg 1 mg	PHC0031 PHC0033
■				■	Animal origin-free	CTS IL-4 Recombinant Human Protein <sup>†</sup>	IL-4 promotes proliferation and differentiation of activated B cells. IL-4 upregulates MHC class II antigen expression and IgE receptors.	100 µg 1 mg	CTP0041 CTP0043
				■	Animal origin-free	IL-5 Recombinant Human Protein <sup>††</sup>	IL-5 promotes the growth and differentiation of eosinophils.	10 µg	PHC0055
				■	Animal origin-free	CTS IL-6 Recombinant Human Protein <sup>†</sup>	IL-6 is a pleiotropic cytokine involved in several cellular processes including inflammation, hematopoiesis, and immune response.	100 µg 1 mg	CTP0061 CTP0063
■				■	Animal origin-free	CTS IL-7 Recombinant Human Protein <sup>†</sup>	IL-7 stimulates the proliferation of pre-B and pro-B cells. IL-7 also supports the maturation of megakaryocytes.	100 µg 1 mg	CTP0071 CTP0073
■					Animal origin-free	IL-15 Recombinant Human Protein <sup>†</sup>	IL-15 induces proliferation of PMA-activated peripheral blood mononuclear cells and functions as a maturation factor for natural killer cells.	100 µg 1 mg	PHC9151 PHC9153
■					Animal origin-free	IL-21 Recombinant Human Protein <sup>†</sup>	IL-21 appears to play important roles in B and T cell proliferation after antigen stimulation and natural killer cell maturation.	100 µg 1 mg	PHC0211 PHC0213
■				■	Animal origin-free	CTS GM-CSF Recombinant Human Protein <sup>†</sup>	GM-CSF is involved in many biological responses, including the development of granulocyte and macrophage progenitor cells, initiation of the differentiation of myeloblasts and monoblasts, and chemotaxis of eosinophils.	100 µg 1 mg	CTP2011 CTP2013
■					Animal origin-free	CTS TNF-α Recombinant Human Protein <sup>†</sup>	TNF-α is active in the alteration of the endothelium, inhibition of anticoagulatory mechanisms, and promotion of angiogenesis.	100 µg 1 mg	CTP3011 CTP3013
	■	■	■		Animal origin-free	CTS FGF-Basic Full Length Recombinant Human Protein <sup>†</sup>	FGF-basic is involved in a number of biological processes including embryonic development and differentiation, and neuronal differentiation, survival, and regeneration.	100 µg 1 mg	CTP0261 CTP0263
				■	Animal origin-free	CTS Stem Cell Factor Recombinant Human Protein <sup>†</sup>	Stem cell factor (SCF) is a pleiotropic factor that acts <i>in utero</i> in germ cell and neural cell development and hematopoiesis.	100 µg 1 mg	CTP2111 CTP2113
	■	■			Animal origin-free	CTS TGFB1 Recombinant Human Protein <sup>†</sup>	TGFB1 acts synergistically with TGF-α in inducing transformation and acts as a negative autocrine growth factor.	100 µg 1 mg	CTP9211 CTP9213
				■	Animal origin-free	CTS FLT3 Ligand Recombinant Human Protein <sup>†</sup>	FLT3 is bioactive protein intended for use in cell culture applications, including preclinical and clinical cell therapy studies. FLT3 ligand is a cytokine involved in hematopoiesis.	100 µg 1 mg	CTP9411 CTP9413
	■				Animal origin-free	PDGF-BB Recombinant Human Protein <sup>†</sup>	PDGF-BB is a bioactive protein intended for use in cell culture applications. Members of the PDGF family are mitogenic factors for cells of mesenchymal origin.	100 µg 1 mg	PHG0041 PHG0043
				■	Animal origin-free	M-CSF Recombinant Human Protein <sup>††</sup>	Macrophage colony-stimulating factor is a bioactive protein that induces proliferation and differentiation of hematopoietic stem cells into macrophages and growth and differentiation of monocytes.	100 µg 1 mg	PHC9501 PHC9504
			■	■	Animal origin-free	EGF Recombinant Human Protein <sup>†</sup>	EGF has a profound effect on the differentiation of specific cells <i>in vivo</i> and is a potent mitogenic factor for a variety of cultured cells of both ectodermal and mesodermal origin.	100 µg 1 mg	PHG0311 PHG0313
				■	Xeno-free	TPO (Thrombopoietin) Recombinant Human Protein <sup>†</sup>	TPO is a humoral growth factor that is necessary for megakaryocyte proliferation and maturation, as well as for thrombopoiesis.	100 µg 1 mg	PHC9511 PHC9513
					Xeno-free	BMP-4 <sup>††</sup>	BMP4 is a member of the bone morphogenetic protein family, which is part of the transforming growth factor-beta superfamily. This particular protein plays an important role in the onset of endochondral bone formation in humans.	100 µg 1 mg	PHC9531 PHC9533
					Xeno-free	Activin A <sup>††</sup>	Activin A is involved in multiple biological processes including inflammation, neural development, and hematopoiesis.	100 µg 1 mg	PHC9561 PHC9563

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Cell type					Category*	Product	Product description	Quantity	Cat. No.
T cell	MSC	PSC	NSC	HSC					
<b>Reagents</b>									
	■				NA	StemPro BM Mesenchymal Stem Cells <sup>††</sup>	Cryopreserved human bone marrow mesenchymal stem cells.	1 x 10 <sup>6</sup> cells	A15652
■					NA	CTS Dynabeads CD3/CD28 <sup>†</sup>	Magnetic beads that are intended for <i>ex vivo</i> isolation, activation, and expansion of human T cells in translational research.	10 mL	40203D
				■	Serum-free	Dynabeads CD34 Positive Isolation Kit <sup>††</sup>	A kit to isolate a high purity and yield of human CD34 <sup>+</sup> progenitor stem cells. Stem cells can be isolated directly from whole blood, cord blood, or bone marrow.	5 mL	11301D
■					NA	CTS DynaMag Magnet <sup>§</sup>	Magnet that is suitable for use with commercially available blood and culture bags, tubing, and connectors.	1 each	12102
■	■	■	■	■	Chemically defined	CTS GlutaMAX-I Supplement <sup>§</sup>	A dipeptide substitute for L-glutamine that can be used as a direct substitute at equimolar concentrations in mammalian and stem cell culture with minimal or no adaptation.	100 mL	A1286001
■	■			■	Chemically defined	L-Glutamine**	An amino acid that is required for cell culture, L-glutamine participates in processes such as the biosynthesis of nucleotides, amino sugars, and proteins.	100 mL	25030081
■	■	■	■	■	Chemically defined	CTS DPBS with calcium and magnesium <sup>§</sup>	The classical DPBS that contains calcium and magnesium, but no phenol red.	1 L	A1285801
■	■	■	■	■	Chemically defined	CTS DPBS without calcium and magnesium <sup>§</sup>	The classical DPBS not containing calcium, magnesium, or phenol red.	1 L	A1285601
	■	■	■		Animal origin-free	CTS TrypLE Select Enzyme <sup>§</sup>	Recombinant enzyme derived from microbial fermentation. Used for the dissociation of attachment-dependent cell lines from plasticware.	100 mL	A1285901
	■				NA	StemPro Osteogenesis Differentiation Kit <sup>††</sup>	Serum-containing kit developed for the differentiation of mesenchymal stem cells to osteocytes in tissue culture vessels.	1 kit	A1007201
	■				Serum-free	StemPro Chondrogenesis Differentiation Kit <sup>††</sup>	Kit developed for the differentiation of mesenchymal stem cells to chondrocytes in tissue culture vessels.	1 kit	A1007101
	■				NA	StemPro Adipogenesis Differentiation Kit <sup>††</sup>	Serum-containing kit developed for the differentiation of mesenchymal stem cells to adipocytes in tissue culture vessels.	1 kit	A1007001
		■			Serum-free	CytoTune-iPS 2.0 Sendai Reprogramming Kit <sup>††</sup>	Kit designed for efficient, integration-free reprogramming of somatic cells into iPSCs.	1 kit 3 kits	A16517 A16518
		■			Animal origin-free	CTS CytoTune-iPS 2.1 Sendai Reprogramming Kit <sup>†</sup>	Kit designed for efficient, integration-free reprogramming for iPSC lines from both fibroblasts and blood, with extensive testing and documentation to support your regulatory submission.	1 kit	A34546
		■			Serum-free Xeno-free	PSC Cardiomyocyte Differentiation Kit <sup>††</sup>	Kit consists of a set of serum-free and xeno-free media that enable efficient differentiation of human pluripotent stem cells to contracting cardiomyocytes.	1 kit	A2921201
		■			Serum-free	PSC Dopaminergic Neuron Differentiation Kit <sup>††</sup>	Kit consists of a culture media system that enables the differentiation of human pluripotent stem cells (hPSCs) into functional midbrain dopaminergic neurons.	1 kit	A3147701
		■			Xeno-free	PSC Definitive Endoderm Induction Kit <sup>††</sup>	Kit consists of two xeno-free media that enable efficient induction of human pluripotent stem cells (PSCs) to definitive endoderm.	1 kit	A3062601

## Ordering information

Cell type					Category*	Product	Product description	Quantity	Cat. No.
T cell	MSC	PSC	NSC	HSC					
<b>Extracellular matrices</b>									
		■	■		Xeno-free	CTS CELLstart Substrate <sup>†</sup>	A defined substrate, containing only components of human origin. Supports human ESC attachment and expansion of undifferentiated colonies in serum-free medium without the need for feeder cells.	2 mL	A1014201
		■			Animal origin-free	CTS Recombinant Vitronectin <sup>§</sup>	A recombinant human protein that provides a defined surface for feeder-free culture of human PSCs.	1 mL	A27940
			■		Xeno-free	rh Laminin-521 <sup>††</sup>	A recombinant human protein that provides a defined surface for culture of NSCs.	100 µg 1 mg	A29248 A29249
<b>Preservation media</b>									
■	■	■	■	■	Chemically defined	CTS Synth-a-Freeze Medium <sup>§</sup>	A chemically defined, protein-free liquid cryopreservation medium intended for freezing and storing a variety of mammalian cell types, including stem cells.	50 mL	A1371301
		■			Xeno-free	PSC Cryopreservation Kit <sup>††</sup>	Kit that contains PSC Cryopreservation Medium and RevitaCell Supplement. When used in combination, these reagents help minimize loss of cell viability, maximize post-thaw recovery, and minimize unwanted differentiation of pluripotent stem cells.	50 mL	A2644601
		■			Animal origin-free	RevitaCell Supplement <sup>††</sup>	A chemically defined recovery supplement for efficient and optimal post-thaw recovery of cryopreserved pluripotent stem cells and primary cells.	5 mL	A2644501
			■		Serum-free	CTS Hibernate-A Medium <sup>†</sup>	A serum-free, nutrient basal medium for the short-term maintenance of brain tumors, umbilical cords, and foreskins in ambient CO <sub>2</sub> conditions.	500 mL	A1370501
			■		Serum-free	CTS Hibernate-E Medium <sup>†</sup>	A serum-free, nutrient basal medium for the short-term maintenance of brain tumors, umbilical cords, and foreskins in ambient CO <sub>2</sub> conditions.	500 mL	A1370601

\* Category:

- Animal origin-free: A finished product is considered to be animal origin-free to the primary level if all ingredients of the product are not of animal origin.
- Xeno-free: A finished product is Xeno-free if it satisfies all of the conditions laid out for animal origin-free products with the exception that it may contain ingredients, components, or subcomponents of human origin.
- Serum-free: No human or animal serum is used but may still contain individual serum proteins like transferrin. These materials are not animal origin-free but are less biologically variable, and there is no need to add additional serum to the mix.
- Chemically defined: All components are fully defined (no biological components).

\*\* For *In Vitro* Diagnostic Use.

† For Human *Ex Vivo* Tissue and Cell Culture Processing Applications. Caution: When used as a medical device, Federal Law restricts this device to sale by or on the order of a physician.

‡ For Research Use Only or Noncommercial Manufacturing of Cell-Based Products for Clinical Research. Caution: Not intended for direct administration into humans or animals.

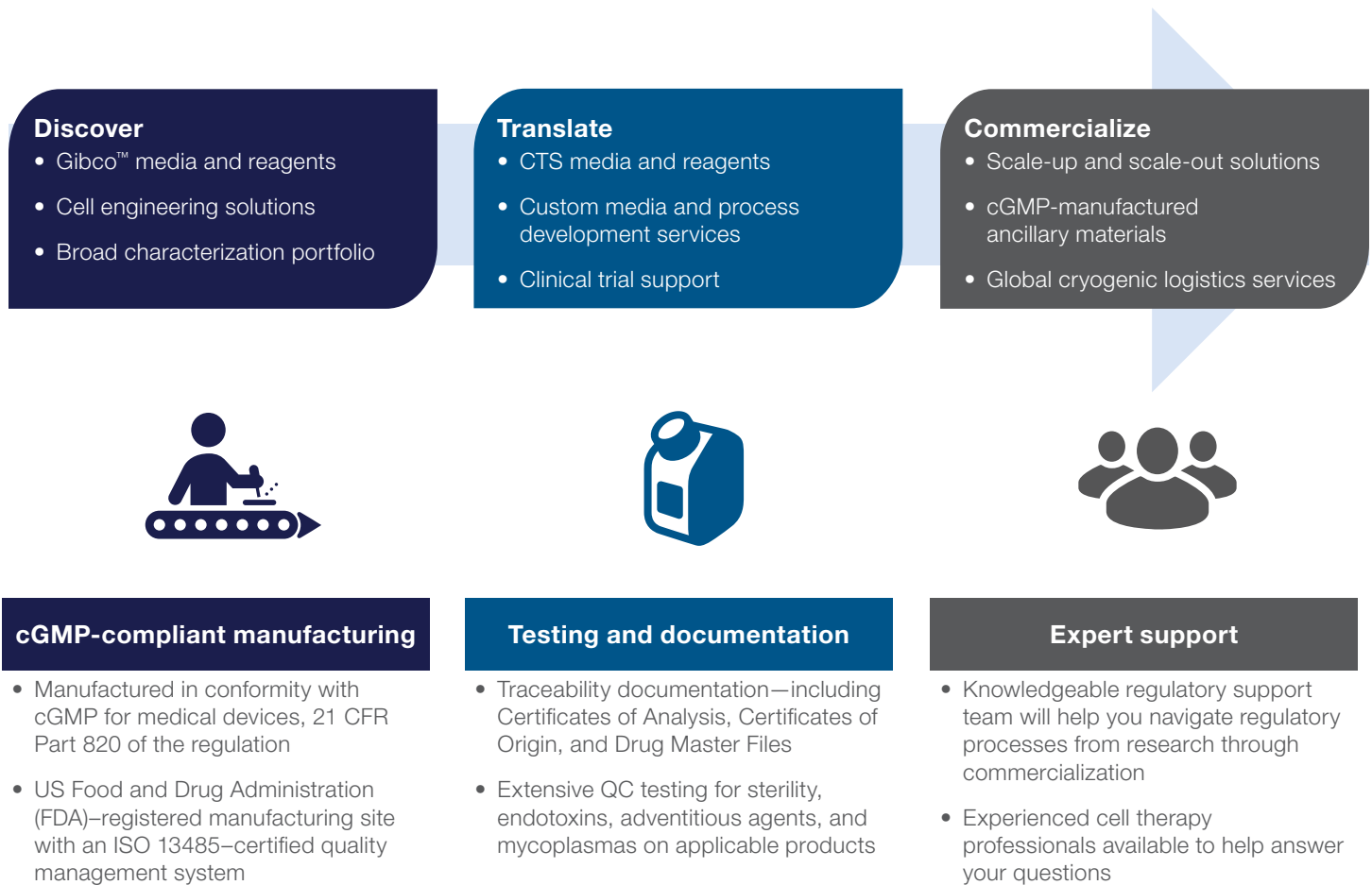
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