



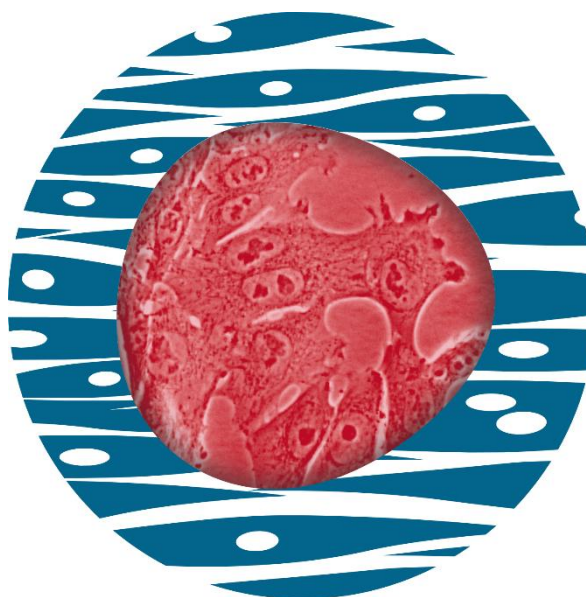
HEK293-CD20

Cat.-No.: INS-SF-1038

CD20 Expressing Stable Recombinant HEK293 Cell Line

Product Sheet

→ At a glance		
BSL Level 1	Coating Collagen Coating (INS-SU-1017) for initial recovery	Growth Adherent
Storage <2d: -80°C >2d: liquid Nitrogen	Medium HEK293 Growth Medium C (INS-ME-1046)	Expression Level Medium-high 22500 molecules/cell





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→ Intended Use and Licensing

This product is intended for in vitro laboratory research use only. It is not intended for any animal or human therapeutic or diagnostic use.

If you have purchased this cell line for **academic, non-profit research**, the use of this cell line is governed by the **inscreenex Limited Research Use License (LRUL)**. Please refer to the LRUL for the full terms and conditions, and relevant use limitations. If you have purchased this cell line for **commercial, for-profit research**, the use of this cell line is governed by the **inscreenex Limited Commercial Use License (LCUL)**. Please refer to the LCUL for the full terms and conditions, and relevant use limitations. If you wish to use the cell line for commercial purposes that fall outside the permitted use in the LCUL please contact licensing@inscreenex.com.



→ Background Information

HEK293-CD20 is a recombinant HEK293 cell line expressing full length human CD20 (B-lymphocyte antigen CD20).

Catalog number: INS-SF-1038

Target: human CD20

Target aliases: MS4A1, Membrane Spanning 4-Domains A, Bp35, FMC7

Target expression level(s): Medium-high (22500 molecules/cell)

Biosafety level (BSL): Level 1

Cell Background: HEK293 (*Homo sapiens*, human)

Growth properties: adherent

Target Background

CD20 (also known as MS4A1) is a four-pass transmembrane protein on the B cell lineage. It is abundant on pre-B and mature B cells in blood, lymph node, spleen, and tonsil. It is absent on hematopoietic stem cells and plasma cells. CD20 regulates B cell receptor signaling and calcium flux. It supports activation, proliferation, and survival. High expression marks B cell malignancies such as diffuse large B cell lymphoma, follicular lymphoma, chronic lymphocytic leukemia, and mantle cell lymphoma. It is implicated in autoimmune disease including rheumatoid arthritis and multiple sclerosis. Clinically validated therapeutics include Rituximab, Obinutuzumab or Ibritumomab.

Note

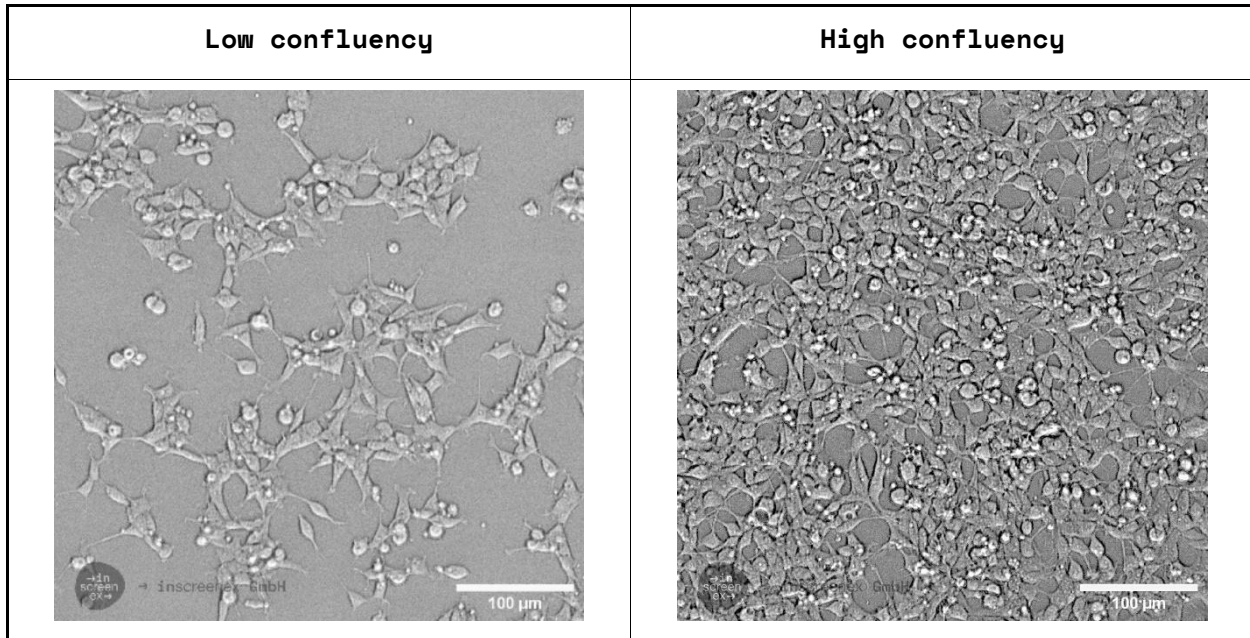
All target sequences undergo codon optimization and other sequence modifications on DNA level to improve recombinant expression and the nucleotide sequence of the recombinant protein therefore differs from database reference sequences. For details refer to section [Target Sequence](#) on page [10](#).

Cell Line Generation

This cell line was generated using our inscreenex landing pad cell lines. These cells contain a recombination site and a selectable marker at a pre-validated genomic locus. Using a matching recombinase and specifically designed expression setups, the DNA payload, i.e. the target, is then specifically inserted into that locus, allowing for reproducible integration at well-defined sites in the genome. This significantly reduces the effort and timelines to isolate a stable clonal population. Expression of the target was then analyzed using flow cytometry and target-specific antibodies.

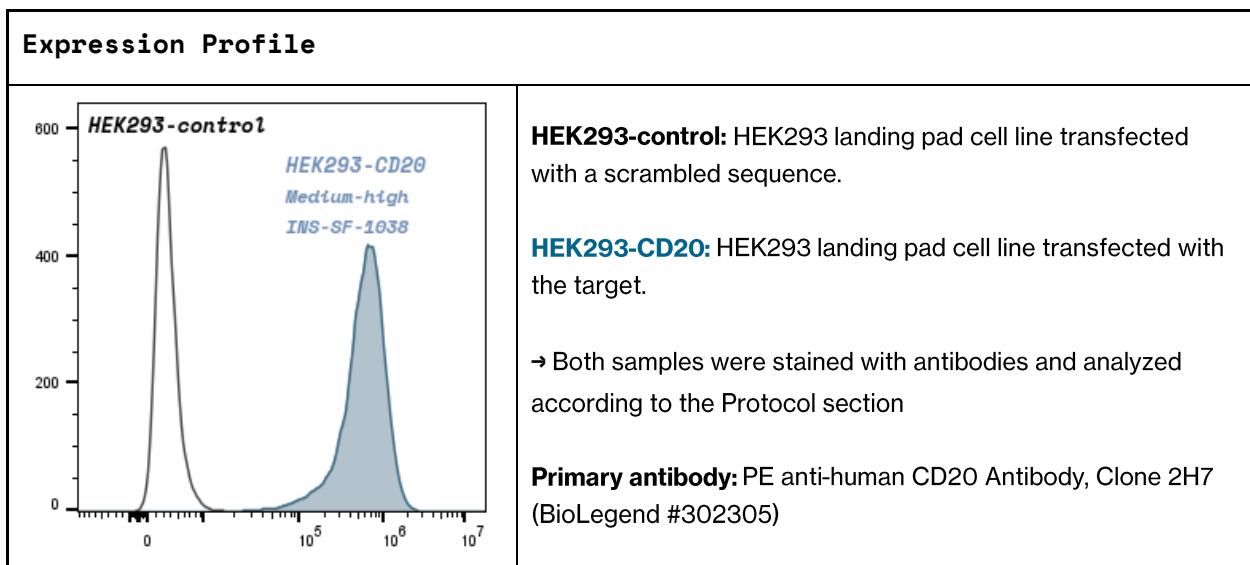
→ Morphology

adherent; epithelial-like; grows in monolayer



→ Cell Characterization

Target expression was analyzed using a target-specific antibody and the indicated staining protocol.





Materials	Protocol
<ul style="list-style-type: none"> - PBS/EDTA solution - 2% FBS/FCS in PBS (FACS Buffer) - Primary antibody: PE anti-human CD20 Antibody, Clone 2H7 (BioLegend #302305) 	<p>Wash Protocol: Add FACS Buffer, resuspend cells gently, then centrifuge at 300×g for 5min.</p> <ol style="list-style-type: none"> 1) Prepare detection reagents in FACS buffer. 2) Aspirate medium from cells. 3) Add PBS/EDTA solution to the cells and incubate at room temperature or 37°C for 5-10min, or until the cells detach. 4) Wash cells 1×. 5) Add primary antibody in FACS buffer, resuspend cells gently. 6) Incubate at ambient temperature for 20-30min. 7) Wash cells 2×. 8) Resuspend in 100-200µl FACS Buffer. 9) Analyze cells using a flow cytometer.

Receptor Density	
22500 molecules/cell	<p>Materials</p> <ul style="list-style-type: none"> - BD Quantibrite™ PE Phycoerythrin Fluorescence Quantitation Kit (#340495) - 2% FBS/FCS in PBS (FACS Buffer) <p>Protocol</p> <p>For a detailed protocol refer to the manufacturer's protocol (Link).</p> <ol style="list-style-type: none"> 1) Reconstitute Beads in FACS Buffer. 2) Measure Beads in the same run as cells using the same flow cytometer settings. 3) Convert Signal to PE molecules/cell according to manufacturer's instructions.

→ Quality Control

Basic information on quality control can be found below. For more details, request a Certificate of Analysis (CoA) by emailing info@inscreenex.com and stating your Lot number.

Cell number: >0.5Mio viable cells (see info on vial label for exact cell number)

Viability: >75% post-thaw viability

Sterility: no contamination detected

Mycoplasma: no contamination detected

Human pathogens: Host cell line negative for HIV-1/2, HBV, HCV



→ Related Products

Products that are related to the HEK293-CD20 cell line and are either required or recommended for a successful cell culture.

Required	Recommended
Medium: HEK293 Growth Medium C (INS-ME-1046) Coating solution: Collagen Coating (INS-SU-1017) for best attachment after thawing.	Cryopreservation: Cell Freezing Medium (INS-SU-1027)

→ Upon Arrival

Cells are routinely shipped on dry ice. Check all containers for leakage and breakage. Check if cells arrived frozen.

If, immediately upon arrival...	...Contact us:
<ul style="list-style-type: none">– the vial appears damaged,– the dry ice level in the shipping container appears low,– the cells appear thawed, or– you have any other concerns regarding the quality of the cells	<ol style="list-style-type: none">1) take photos of the vial and/or the shipping container,2) contact us by email or telephone (see General Inquiries on page 2).
If everything looks good, either seed the cryopreserved cells immediately, or store them:	
<ul style="list-style-type: none">– at -80°C for periods of up to 2 days, or– below -130°C in liquid nitrogen vapor, for long term storage.	

→ Coating Protocol

Our Collagen Coating Solution is a sterile, ready-to-use solution ideal for coating cell culture surfaces.

Note	<p>For best attachment and viability after thawing the cells, we recommend using Collagen-coated flasks or plates for the initial seeding after cryo-recovery.</p> <p>Collagen coating is not required for subsequent routine culture of the cells.</p>
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Required materials	Protocol															
<ul style="list-style-type: none"> – Cell culture plastic (flasks, dishes, plates) – Sterile PBS – Collagen Coating (INS-SU-1017) 	<ol style="list-style-type: none"> 1) Cover the cell culture vessel with Collagen Coating (see table to the left for recommended volumes). Rock back and forth to cover the entire surface if necessary. 2) Incubate for at least 2h at 37°C in the incubator or overnight at 2–8°C. 3) Aspirate Collagen Coating. 4) Wash once with at least 4 volumes of sterile PBS. 5) Aspirate PBS. 6) Use immediately or store coated cell culture plastic according to instructions provided to the left. 															
Storage																
<ul style="list-style-type: none"> – Store Collagen Coating at 2–8°C, if not indicated otherwise on the product label. – Store coated cell culture plastic sealed at 2–8°C for up to 7 days. 																
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<table border="1"> <thead> <tr> <th>Flask/Plate</th> <th>Coating Volume</th> </tr> </thead> <tbody> <tr> <td>T75</td> <td>3ml</td> </tr> <tr> <td>T25</td> <td>1ml</td> </tr> <tr> <td>6-well</td> <td>0.7ml</td> </tr> <tr> <td>12-well</td> <td>0.25ml</td> </tr> <tr> <td>24-well</td> <td>0.1ml</td> </tr> <tr> <td>48-well</td> <td>75µl</td> </tr> <tr> <td>96-well</td> <td>50µl</td> </tr> </tbody> </table>	Flask/Plate	Coating Volume	T75	3ml	T25	1ml	6-well	0.7ml	12-well	0.25ml	24-well	0.1ml	48-well	75µl	96-well	50µl
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→ Medium Information

Note	<p><i>We provide a ready-to-use HEK293 Growth Medium C (INS-ME-1046) and Cell Freezing Medium (INS-SU-1027) for the culture and cryopreservation of stable HEK293 cells.</i></p>
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Storage: Store HEK293 Growth Medium C at 4 to 8°C.

Stability: See Expiry Date on bottle label.

Preparation: Ready-to-use, no preparation required

Selection antibiotic	Anti-contamination antibiotics
<p>Our HEK293 Growth Medium C is shipped ready to use and already contains the selection antibiotic, Hygromycin (150 µg/ml), to guarantee stable long-term expression of the target.</p>	<p>Our HEK293 Growth Medium C does not contain prophylactic antibiotics for prevention of contamination. If you wish to use antibiotics, any standard, cell culture grade antibiotics can be added to the medium.</p>



→ Thaw Cryopreserved Cells

Do not thaw the cells until the recommended medium and coated flasks are on hand. For initial recovery (after delivery of the cells), we recommend thawing the cells on a T25 flask and not exceeding a split ratio of 1:2 to 1:3 for the first split after thawing.

Note	<p><i>For best attachment and viability after thawing the cells, we recommend using Collagen-coated flasks or plates for the initial seeding after cryo-recovery.</i></p> <p><i>Collagen coating is not required for subsequent routine culture of the cells.</i></p>
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Required materials	Protocol
<ul style="list-style-type: none"> – Coated cell culture vessel (see section Coating Protocol on page 6) – HEK293 Growth Medium C (INS-ME-1046) pre-warmed to 37°C – 15ml tube with a conical bottom suitable for centrifugation (e.g. "Falcon tube") 	<ol style="list-style-type: none"> 1) Add 4ml pre-warmed medium to a 15ml tube. 2) Quickly thaw the cryovial at 37°C in a water bath until only a few ice crystals are visible. Disinfect vial briefly by spraying with 70% Ethanol. 3) Transfer thawed cell suspension to the 15ml tube containing 4ml medium. Avoid excessively pipetting up and down. 4) Centrifuge cells at 300×g for 5min. 5) Aspirate supernatant. 6) Gently resuspend the cell pellet in complete Medium. Use a volume appropriate for the cell culture vessel. 7) Transfer cells in coated cell culture vessel and place in the incubator (37°C, 5% CO₂). 8) Change the medium after 2 days.

→ Freeze Cells for Cryopreservation

Cell should be grown to 90% confluence before cryopreservation. Avoid full confluence before cryopreservation.

Required materials	Protocol
<ul style="list-style-type: none"> – Cell Freezing Medium (INS-SU-1027) – PBS – Trypsin/EDTA solution (TE) – 2% FBS in PBS – 15ml tube – Cryovial(s) 	<ol style="list-style-type: none"> 1) Aspirate medium, wash with PBS and aspirate PBS. 2) Add Trypsin/EDTA (TE) solution to the cells and incubate at room temperature or 37°C for 5-10min, or until the cells detach. 3) Examine the cells under a microscope. When the cells start to detach, gently tap the side of the vessel to loosen the remaining cells. 4) Resuspend cells in 2% FBS in PBS and transfer to a 15ml conical bottom tube. 5) Centrifuge cells at 300×g for 5min.



<ul style="list-style-type: none"> - Freezing container ("Mr. Frosty" or similar) - 15ml tube with a conical bottom suitable for centrifugation (e.g. "Falcon tube") 	<ol style="list-style-type: none"> 6) Aspirate supernatant and gently resuspend cell pellet in Freezing medium (approx. 1Mio. cells/ml). 7) Transfer cell suspension into cryovial(s) and place them into a freezing container ("Mr.Frosty" or similar). 8) Place the freezing container at -80°C for 16-24h. 9) Transfer cryovials to liquid nitrogen vapor for long-term-storage.
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→ Routine Adherent Cell Culture

Work in a sterile environment and follow Good Cell and Tissue Culture Practice.

Temperature: 37°C

Environment: 5% CO₂ (v/v), humidified atmosphere

Split ratio: 1:2 for initial split after thawing, 1:5 to 1:10 for routine culture

Confluence: split at 70–90% confluence

Medium change: every 2–3 days

Required materials	Protocol																							
<ul style="list-style-type: none"> - HEK293 Growth Medium C (INS-ME-1046) - PBS - Trypsin/EDTA solution (TE) 	<ol style="list-style-type: none"> 1) Aspirate medium. 2) Wash with PBS and aspirate PBS. 3) Add Trypsin/EDTA (TE) solution to the cells and incubate at room temperature or 37°C for 5-10min, or until the cells detach. 4) Examine the cells under a microscope. When the cells start to detach, gently tap the side of the vessel to loosen the remaining cells. 5) Resuspend cells in complete Medium thereby inactivating the Trypsin/EDTA (TE) solution. 6) Transfer an aliquot of the cell suspension to a new cell culture vessel containing fresh complete Medium. 7) Place into incubator. 																							
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→ Target Sequence

Note	<i>All target sequences undergo codon optimization and other sequence modifications on DNA level to improve heterologous expression. While the protein (amino acid sequence) is identical to published reference sequences, the DNA and RNA sequence may therefore deviate from published reference sequences.</i>
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Amino Acid Sequence (Protein)

Uniprot ID: P11836-1

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MTTPRNSVNGTFPAEPMKGP IAMQSGPKPLFRMSSLVGPTQSFMRKSLTLAGVQIMNGLFHIALGGLLMIPAGIYAPICVTVWYPLWGGIMYIISGSLAATEKNSRKCLVKGKMMNSLSLFAAISGMILSIMDILNIKISHFLKMESLN
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Nucleotide sequence (DNA)

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→ References

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