# L'utilisation de cellules de bébés avortés dans le développement des vaccins covid-19

Des **lignées cellulaires issues** de cellules de bébés avortés ont été utilisées dans le développement de **tous les principaux VACCINS COVID-19**.

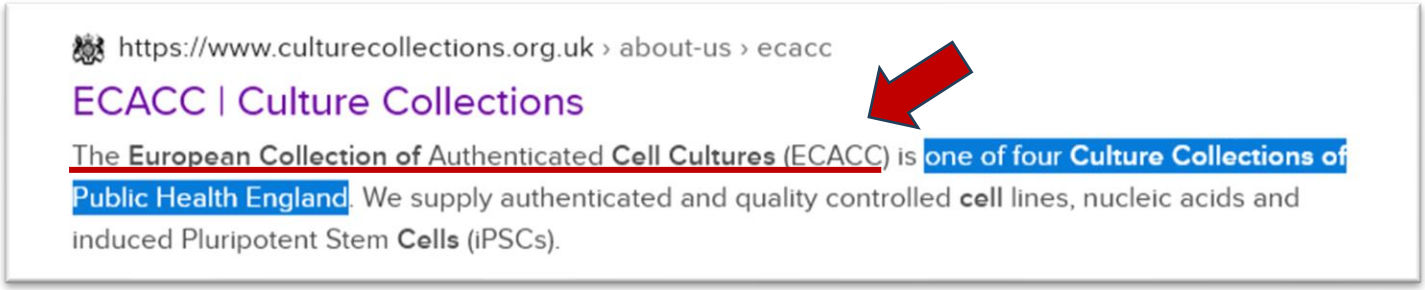
**Pfizer/BioNTech, Moderna, AstraZeneca, Janssen / Johnson & Johnson** et **Novavax** ont tous utilisé des cellules de bébés avortés dans le développement de leurs vaccins.

Ce qui suit est une étude détaillée de **la littérature scientifique** accessible au public concernant l'utilisation de lignées cellulaires fœtales dans le développement des vaccins COVID-19 mentionnés ci-dessus.

La lignée cellulaire **HEK 293 (issue de rein embryonnaire humain)** est la plus fréquemment mentionnée dans la littérature scientifique concernant le développement de vaccins contre le COVID-19.

**HEK 293** et d'autres lignées cellulaires sont « maintenues en vie » dans des « **banques de cellules** », également appelées « **collections de cultures** ». Les entreprises et les universités peuvent s'approvisionner en cellules à partir de ces collections.

La collection européenne de cultures cellulaires authentifiées **(ECACC)** est l'une des quatre « collections de cultures » de **Public Health England** le **ministère de la santé du gouvernement britannique**.


https://www.culturecollections.org.uk › about-us › ecacc

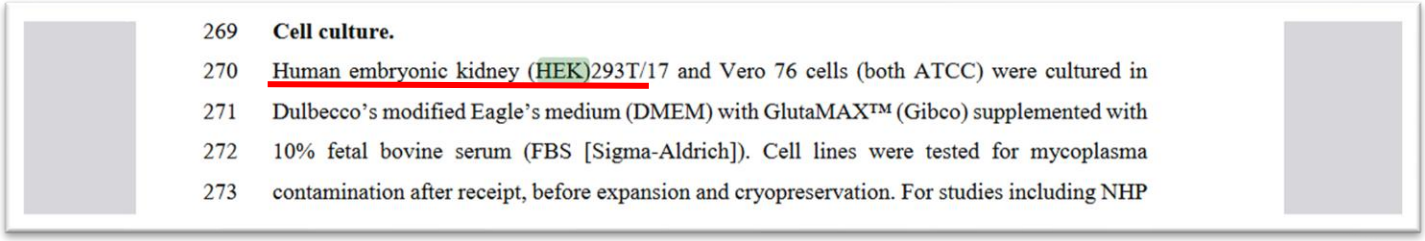
ECACC | Culture Collections

The European Collection of Authenticated Cell Cultures (ECACC) is one of four Culture Collections of Public Health England. We supply authenticated and quality controlled cell lines, nucleic acids and induced Pluripotent Stem Cells (iPSCs).

https://www.culturecollections.org.uk/about-us/ecacc/ (consulté *12-11-2024)*

**Pfizer/BioNTech**

La lignée cellulaire **HEK 293** a été utilisée pour tester le vaccin chez les singes (primates non humains). Vous pouvez en prendre connaissance dans le rapport suivant:

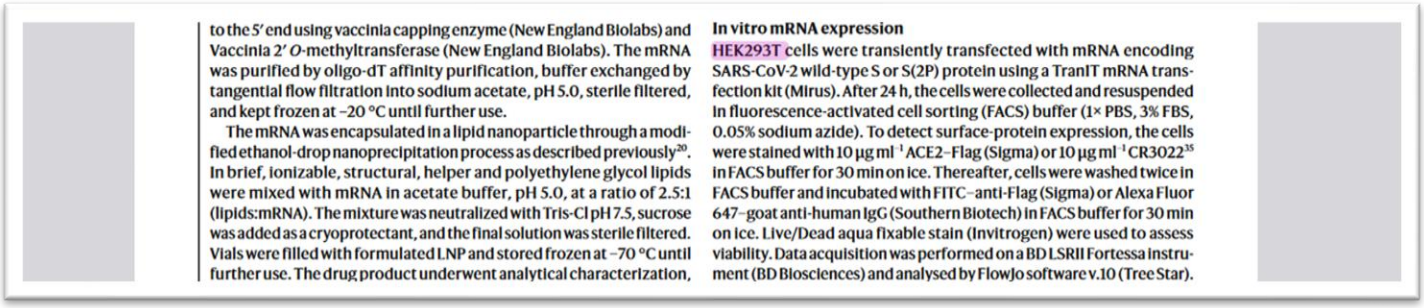

269 **Cell culture.**
270 Human embryonic kidney (HEK)293T/17 and Vero 76 cells (both ATCC) were cultured in
271 Dulbecco's modified Eagle's medium (DMEM) with GlutaMAX™ (Gibco) supplemented with
272 10% fetal bovine serum (FBS [Sigma-Aldrich]). Cell lines were tested for mycoplasma
273 contamination after receipt, before expansion and cryopreservation. For studies including NHP

*A prefusion SARS-CoV-2 spike RNA vaccine is highly immunogenic and prevents lung infection in non-human primates, Vogel et al., posted on bioRxiv.org, September 08 2020.*
https://www.biorxiv.org/content/10.1101/2020.09.08.280818v1 (consulté 10-11-2024)
https://www.biorxiv.org/content/10.1101/2020.09.08.280818v1.full.pdf (consulté 10-11-2024)

« **BNT162b2** » est le nom de code du vaccin de Pfizer/BioNTech dans le rapport.

**Moderna**

La lignée cellulaire **HEK 293** est mentionnée comme ayant été utilisée pour tester le vaccin. Vous pouvez en prendre connaissance dans le rapport suivant:



to the 5′ end using vaccinia capping enzyme (New England Biolabs) and Vaccinia 2′ *O*-methyltransferase (New England Biolabs). The mRNA was purified by oligo-dT affinity purification, buffer exchanged by tangential flow filtration into sodium acetate, pH 5.0, sterile filtered, and kept frozen at −20 °C until further use.

The mRNA was encapsulated in a lipid nanoparticle through a modified ethanol-drop nanoprecipitation process as described previously[20]. In brief, ionizable, structural, helper and polyethylene glycol lipids were mixed with mRNA in acetate buffer, pH 5.0, at a ratio of 2.5:1 (lipids:mRNA). The mixture was neutralized with Tris-Cl pH 7.5, sucrose was added as a cryoprotectant, and the final solution was sterile filtered. Vials were filled with formulated LNP and stored frozen at −70 °C until further use. The drug product underwent analytical characterization,

**In vitro mRNA expression**

HEK293T cells were transiently transfected with mRNA encoding SARS-CoV-2 wild-type S or S(2P) protein using a TranIT mRNA transfection kit (Mirus). After 24 h, the cells were collected and resuspended in fluorescence-activated cell sorting (FACS) buffer (1× PBS, 3% FBS, 0.05% sodium azide). To detect surface-protein expression, the cells were stained with 10 μg ml$^{-1}$ ACE2–Flag (Sigma) or 10 μg ml$^{-1}$ CR3022[35] in FACS buffer for 30 min on ice. Thereafter, cells were washed twice in FACS buffer and incubated with FITC–anti-Flag (Sigma) or Alexa Fluor 647–goat anti-human IgG (Southern Biotech) in FACS buffer for 30 min on ice. Live/Dead aqua fixable stain (Invitrogen) were used to assess viability. Data acquisition was performed on a BD LSRII Fortessa instrument (BD Biosciences) and analysed by FlowJo software v.10 (Tree Star).

*SARS-CoV-2 mRNA vaccine design enabled by prototype pathogen preparedness, Corbett et al., published by Nature.com, 05 August 2020,* https://www.nature.com/articles/s41586-020-2622-0 (consulté 10-11-2024)
https://www.nature.com/articles/s41586-020-2622-0.pdf (consulted 10-11-2024)

**AstraZeneca**

Selon les informations sur le produit du vaccin AstraZeneca, le vaccin est produit dans des «cellules de rein embryonnaire humain (HEK) 293 génétiquement modifiées» également connu sous le nom de **HEK 293**.

"COVID-19 Vaccine AstraZeneca contains genetically modified organisms (GMOs). Any unused vaccine or waste material should be disposed of in compliance with the local guidance for genetically modified organisms or biohazardous waste. Spills should be disinfected using agents with activity against adenovirus.

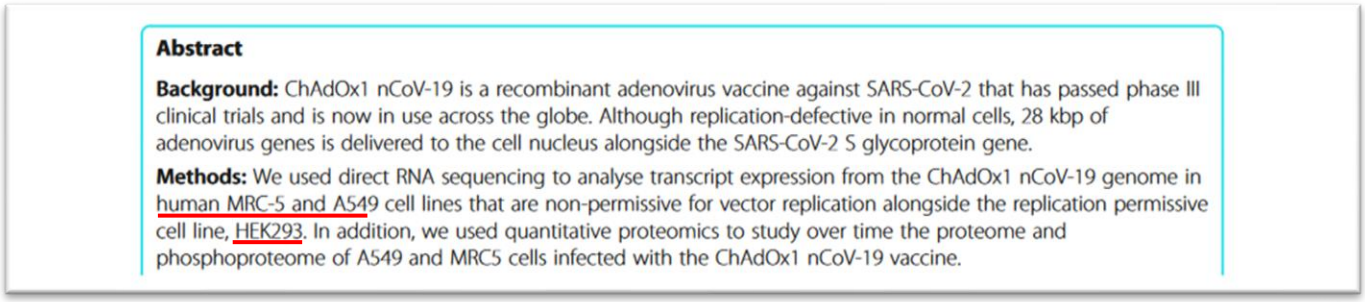
**6. Contents of the pack and other information**
**What COVID-19 Vaccine AstraZeneca contains**
One dose (0.5 ml) contains:
Chimpanzee Adenovirus encoding the SARS-CoV-2 Spike glycoprotein ChAdOx1-S *, not less than 2.5 × 108 infectious units
*Produced **in genetically modified human embryonic kidney (HEK) 293 cells** and by recombinant DNA technology.

This product contains **genetically modified organisms (GMOs)**."

*Website of the European Medicines Agency, see product information about the AstraZeneca vaccine p29*
https://www.ema.europa.eu/en/documents/product-information/covid-19-vaccine-astrazeneca-product-information-approved-chmp-29-january-2021-pending-endorsement-european-commission_en.pdf *(consulté 14-11-2024)*

La lignée cellulaire **MRC-5** est également mentionnée comme ayant été utilisée pour tester le vaccin. Vous pouvez le lire dans le rapport suivant:

(« **ChAdOx1** » est le nom de code du vaccin d'AstraZeneca).



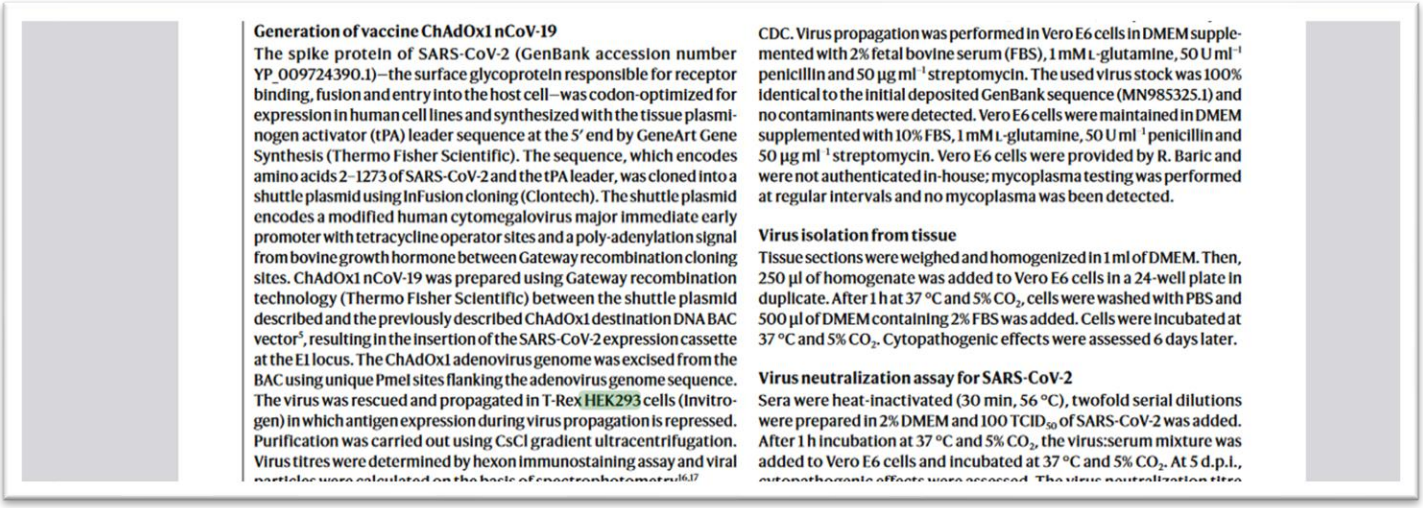
**Abstract**

**Background:** ChAdOx1 nCoV-19 is a recombinant adenovirus vaccine against SARS-CoV-2 that has passed phase III clinical trials and is now in use across the globe. Although replication-defective in normal cells, 28 kbp of adenovirus genes is delivered to the cell nucleus alongside the SARS-CoV-2 S glycoprotein gene.

**Methods:** We used direct RNA sequencing to analyse transcript expression from the ChAdOx1 nCoV-19 genome in human MRC-5 and A549 cell lines that are non-permissive for vector replication alongside the replication permissive cell line, HEK293. In addition, we used quantitative proteomics to study over time the proteome and phosphoproteome of A549 and MRC5 cells infected with the ChAdOx1 nCoV-19 vaccine.

*SARS-CoV-2 candidate vaccine ChAdOx1 nCoV-19 infection of human cell lines reveals a normal low range of viral backbone gene expression alongside very high levels of SARS-CoV-2 S glycoprotein expression, Almuqrin et al., published by researchsquare.com, 20 October 2020 and updated 15 March 2021.*
https://www.researchsquare.com/article/rs-94837/v1 (consulted 10-11-2024)
https://genomemedicine.biomedcentral.com/counter/pdf/10.1186/s13073-021-00859-1.pdf (consulté 10-11-2024)

Une autre étude sur le vaccin d'AstraZeneca révèle que la lignée cellulaire **HEK 293** a apparemment été utilisée pour tester le vaccin, en l'occurrence sur des singes. Vous pouvez lire cela dans le rapport suivant:



**Generation of vaccine ChAdOx1 nCoV-19**

The spike protein of SARS-CoV-2 (GenBank accession number YP_009724390.1)—the surface glycoprotein responsible for receptor binding, fusion and entry into the host cell—was codon-optimized for expression in human cell lines and synthesized with the tissue plasminogen activator (tPA) leader sequence at the 5′ end by GeneArt Gene Synthesis (Thermo Fisher Scientific). The sequence, which encodes amino acids 2–1273 of SARS-CoV-2 and the tPA leader, was cloned into a shuttle plasmid using InFusion cloning (Clontech). The shuttle plasmid encodes a modified human cytomegalovirus major immediate early promoter with tetracycline operator sites and a poly-adenylation signal from bovine growth hormone between Gateway recombination cloning sites. ChAdOx1 nCoV-19 was prepared using Gateway recombination technology (Thermo Fisher Scientific) between the shuttle plasmid described and the previously described ChAdOx1 destination DNA BAC vector[5], resulting in the insertion of the SARS-CoV-2 expression cassette at the E1 locus. The ChAdOx1 adenovirus genome was excised from the BAC using unique PmeI sites flanking the adenovirus genome sequence. The virus was rescued and propagated in T-Rex HEK293 cells (Invitrogen) in which antigen expression during virus propagation is repressed. Purification was carried out using CsCl gradient ultracentrifugation. Virus titres were determined by hexon immunostaining assay and viral particles were calculated on the basis of spectrophotometry[16,17]

CDC. Virus propagation was performed in Vero E6 cells in DMEM supplemented with 2% fetal bovine serum (FBS), 1 mM L-glutamine, 50 U ml$^{-1}$ penicillin and 50 µg ml$^{-1}$ streptomycin. The used virus stock was 100% identical to the initial deposited GenBank sequence (MN985325.1) and no contaminants were detected. Vero E6 cells were maintained in DMEM supplemented with 10% FBS, 1 mM L-glutamine, 50 U ml$^{-1}$ penicillin and 50 µg ml$^{-1}$ streptomycin. Vero E6 cells were provided by R. Baric and were not authenticated in-house; mycoplasma testing was performed at regular intervals and no mycoplasma was been detected.

**Virus isolation from tissue**

Tissue sections were weighed and homogenized in 1 ml of DMEM. Then, 250 µl of homogenate was added to Vero E6 cells in a 24-well plate in duplicate. After 1 h at 37 °C and 5% $CO_2$, cells were washed with PBS and 500 µl of DMEM containing 2% FBS was added. Cells were incubated at 37 °C and 5% $CO_2$. Cytopathogenic effects were assessed 6 days later.

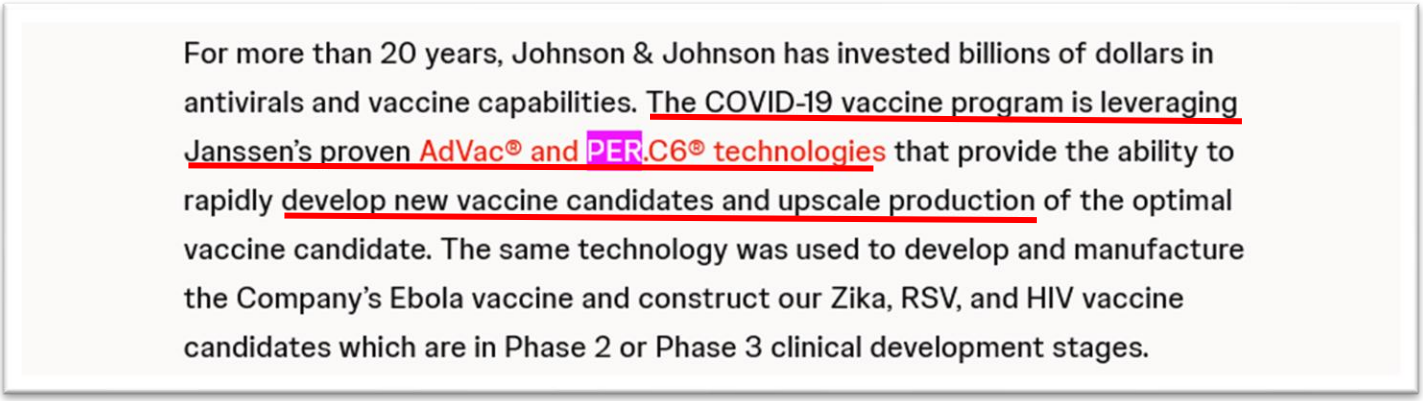
**Virus neutralization assay for SARS-CoV-2**

Sera were heat-inactivated (30 min, 56 °C), twofold serial dilutions were prepared in 2% DMEM and 100 $TCID_{50}$ of SARS-CoV-2 was added. After 1 h incubation at 37 °C and 5% $CO_2$, the virus:serum mixture was added to Vero E6 cells and incubated at 37 °C and 5% $CO_2$. At 5 d.p.i., cytopathogenic effects were assessed. The virus neutralization titre

*ChAdOx1 nCoV-19 vaccine prevents SARS-CoV-2 pneumonia in rhesus macaques, van Doremalen et al., published by Nature.com, 30 July 2020.*
https://www.nature.com/articles/s41586-020-2608-y (consulté 10-11-2024)
https://www.nature.com/articles/s41586-020-2608-y.pdf (consulté 10-11-2024)

**Janssen / Johnson & Johnson**

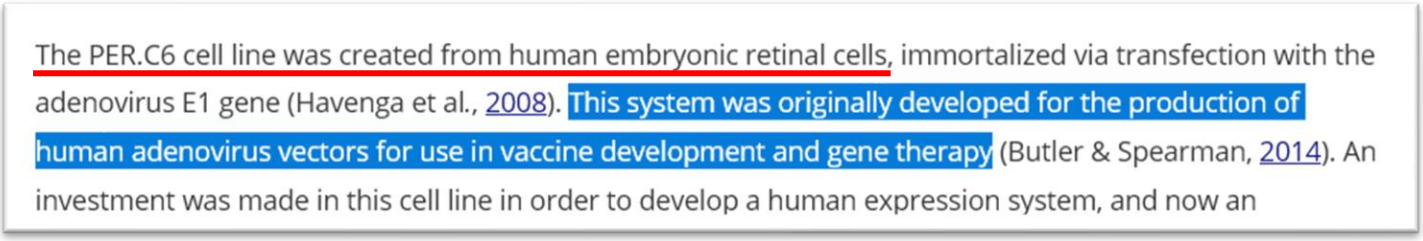
La lignée cellulaire **PER.C6** a été utilisée pour le développement et la production de masse du vaccin.



For more than 20 years, Johnson & Johnson has invested billions of dollars in antivirals and vaccine capabilities. The COVID-19 vaccine program is leveraging Janssen's proven AdVac® and PER.C6® technologies that provide the ability to rapidly develop new vaccine candidates and upscale production of the optimal vaccine candidate. The same technology was used to develop and manufacture the Company's Ebola vaccine and construct our Zika, RSV, and HIV vaccine candidates which are in Phase 2 or Phase 3 clinical development stages.

*Website of Janssen / Johnson & Johnson (*consulté *10-11-2024)* https://www.jnj.com/media-center/press-releases/johnson-johnson-announces-a-lead-vaccine-candidate-for-covid-19-landmark-new-partnership-with-u-s-department-of-health-human-services-and-commitment-to-supply-one-billion-vaccines-worldwide-for-emergency-pandemic-use

La lignée cellulaire **PER.C6** (dérivée des **cellules rétiniennes d'un bébé avorté**) aurait été créée dans le but de développer des vaccins et à être utilisée pour la thérapie génique.



The PER.C6 cell line was created from human embryonic retinal cells, immortalized via transfection with the adenovirus E1 gene (Havenga et al., 2008). This system was originally developed for the production of human adenovirus vectors for use in vaccine development and gene therapy (Butler & Spearman, 2014). An investment was made in this cell line in order to develop a human expression system, and now an

*Human cell lines for biopharmaceutical manufacturing: history, status, and future perspectives, Dumont et al., published by tandfonline.com, 18 Sep 2015.*
https://www.tandfonline.com/doi/full/10.3109/07388551.2015.1084266#d1e200 (consulté 10 Nov 2024)

**Human adenovirus serotype 26 vaccines**

Janssen/Johnson & Johnson (Ad26.COV2-S)

The Ad26.COV2-S vaccine developed by Janssen Vaccines & Prevention B.V. (Johnson & Johnson) uses a first-generation Ad26 vector (E1/E3 deleted) to deliver the pre-fusion stabilized SARS-CoV-2 spike protein. This protein has been stabilized through a mutation in a

*Adenoviral vector vaccine platforms in the SARS-CoV-2 pandemic, published by Nature.com, Andrade et al., 05 August 2020* https://www.nature.com/articles/s41541-021-00356-x (consulté 10-11-2024)

« **Ad26.COV2-S** » est le nom de code du vaccin Covid-19 de Janssen /Johnson & Johnson.

Janssen / Johnson & Johnson affirment utiliser ce qu'ils appellent le vecteur Ad26 « pour délivrer » une version modifiée de la « la protéine spike » du SRAS-CoV-2 dans leur vaccin.

Ad26 vectors

Ad26 vectors were constructed with two variants of the SARS-CoV-2 S protein sequence (Wuhan/WIV04/2019; GenBank MN996528.1). Sequences were codon optimized and synthesized. Replication-incompetent, E1/E3-deleted Ad26-vectors[19] were produced in PER.C6.TetR cells using a plasmid containing the full Ad26 vector genome and a transgene expression cassette. Sham controls included Ad26-Empty vectors. Vectors were sequenced and tested for expression before use.

*Ad26 vaccine protects against SARS-CoV-2 severe clinical disease in hamsters, Tostanoski et al., published by Nature.com, 03 September 2020.* https://www.nature.com/articles/s41591-020-1070-6 (consulté 11-11-2024) https://www.nature.com/articles/s41591-020-1070-6.pdf (consulté 11-11-2024)

La lignée cellulaire **HEK 293** a apparemment aussi été utilisée pour tester le vaccin sur des hamsters.

Pseudovirus neutralization assay

The SARS-CoV-2 pseudoviruses expressing a luciferase reporter gene were generated in an approach similar to as described previously[10,11,21]. Briefly, the packaging construct psPAX2 (AIDS Resource and Reagent Program), luciferase reporter plasmid pLenti-CMV Puro-Luc (Addgene) and S protein expressing pcDNA3.1-SARS CoV-2 SΔCT were co-transfected into HEK293T cells by lipofectamine 2000 (Thermo Fisher Scientific). The supernatants containing the pseudotype viruses were collected 48 h after transfection; pseudotype viruses were purified by filtration with a 0.45-μm filter. To determine the neutralization activity of the antisera from vaccinated animals, HEK293T-hACE2 cells were seeded in 96-well tissue culture plates at a density of $1.75 \times 10^4$ cells per well overnight. Three-fold serial dilutions of heat-inactivated serum samples were prepared and mixed with 50 μl of pseudovirus. The mixture was incubated at 37 °C for 1 h before adding to HEK293T-hACE2 cells. Forty-eight hours after infection, cells were lysed in Steady-Glo Luciferase Assay (Promega) according to the manufacturer's instructions. SARS-CoV-2 neutralization titers were defined as the sample dilution at which a 50% reduction in relative light units was observed relative to the average of the virus control wells.

*Ad26 vaccine protects against SARS-CoV-2 severe clinical disease in hamsters, Tostanoski et al., published by Nature.com, 03 September 2020.* https://www.nature.com/articles/s41591-020-1070-6 (consulté 11-11-2024) https://www.nature.com/articles/s41591-020-1070-6.pdf (consulté 11-11-2024)

Une autre étude sur le vaccin Janssen /Johnson & Johnson révèle que la lignée cellulaire **PER.C6**.TetR a apparemment été utilisée pour tester le vaccin, en l'occurrence sur des singes, «macaques rhésus».

### Ad26 vectors

Ad26 vectors were constructed with seven variants of the SARS-CoV-2 spike (S) protein sequence (Wuhan/WIV04/2019; GenBank MN996528.1). Sequences were codon-optimized and synthesized. Replication-incompetent, E1/E3-deleted Ad26-vectors[11] were produced in PER.C6.TetR cells using a plasmid containing the full Ad26 vector genome and a transgene expression cassette. Vectors were sequenced and tested for expression before use.

La lignée cellulaire **HEK 293** aurait également été utilisée pour tester le vaccin sur des singes, des «macaques rhésus».

### Pseudovirus neutralization assay

The SARS-CoV-2 pseudoviruses expressing a luciferase reporter gene were generated in an similar approach to that previously described[9,10,16]. In brief, the packaging construct psPAX2 (AIDS Resource and Reagent Program), luciferase reporter plasmid pLenti-CMV Puro-Luc (Addgene), and spike protein expressing pcDNA3.1-SARS-CoV-2 SΔCT were co-transfected into HEK293T cells with calcium phosphate. The supernatants containing the pseudotype viruses were collected 48 h after transfection; pseudotype viruses were purified by filtration with 0.45-μm filter. To determine the neutralization activity of the antisera from vaccinated macaques, HEK293T-hACE2 cells were seeded in 96-well tissue culture plates at a density of $1.75 \times 10^4$ cells per well overnight. Twofold serial dilutions of heat-inactivated serum samples were prepared and mixed with 50 μl of pseudovirus. The mixture was incubated at 37 °C for 1 h before adding to HEK293T-hACE2 cells. After 48 h, cells were lysed in Steady-Glo Luciferase Assay (Promega) according to the manufacturer's instructions. SARS-CoV-2 neutralization titres were defined as the sample dilution at which a 50% reduction in relative light units was observed relative to the average of the virus control wells.

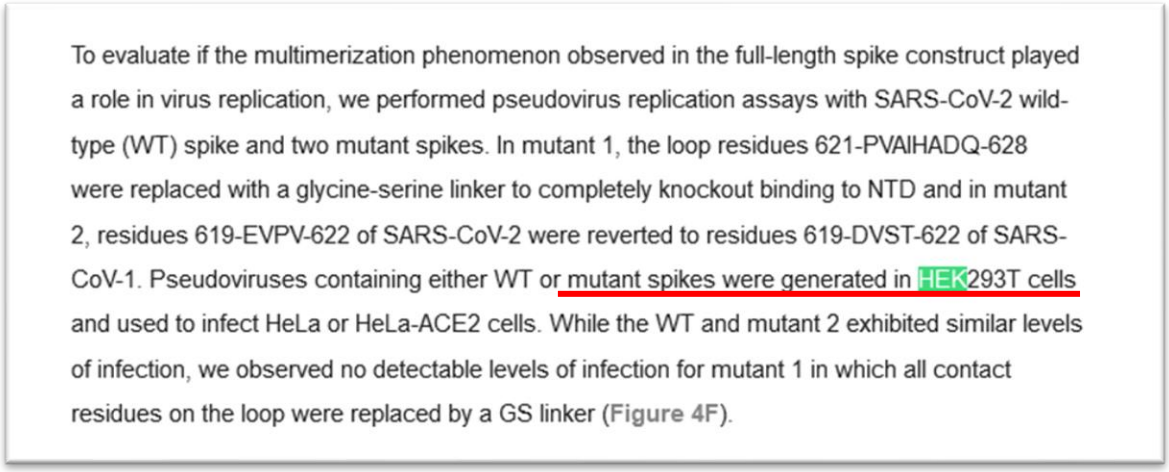
*Single-shot Ad26 vaccine protects against SARS-CoV-2 in rhesus macaques, Mercado et al., published by Nature.com, 30 July 2020.* https://www.nature.com/articles/s41586-020-2607-z (consulté 11-11-2024)
https://www.nature.com/articles/s41586-020-2607-z.pdf (consulté 11-11-2024)

**Novavax**

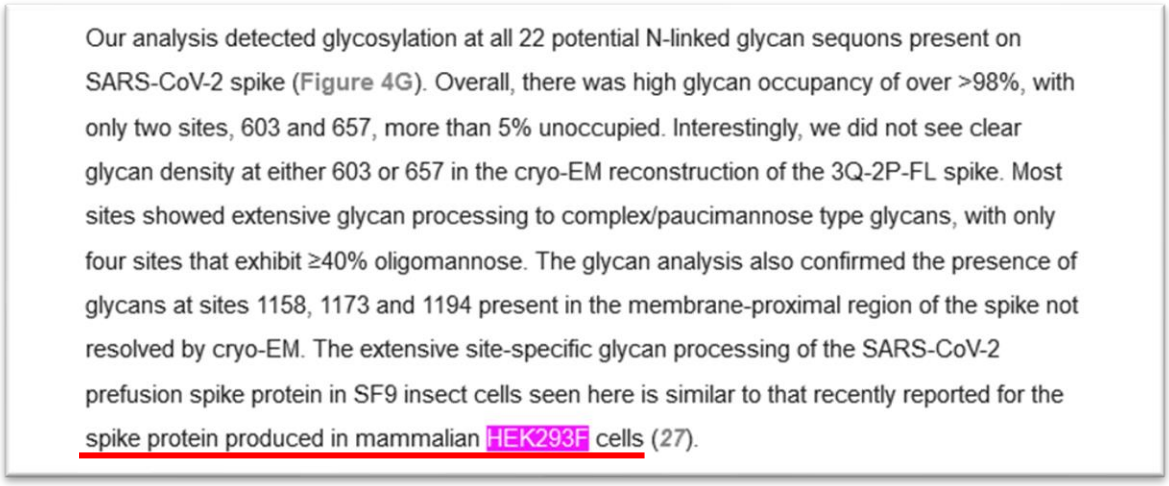
La lignée cellulaire **HEK 293** aurait été utilisée pour tester le vaccin. La publication susmentionnée explique que la protéine spike aurait été produite dans des cellules de rein embryonnaire humain **(HEK) 293**.

region of the spike not resolved by cryo-EM. By comparison with site-specific glycan processing of the spike protein produced in mammalian human embryonic kidney (HEK) 293F cells, both mammalian cells and insect cells exhibit extensive processing at most sites. In general, however processing of glycans on the 2019 CoV prefusion spike protein from insect cells was somewhat greater, particularly at sites 709 and 717, which were predominately oligomannose in spike from HEK293 cells but exclusively complex or paucimannose in spike from Sf9 cells (*29*).

*Structural analysis of full-length SARS-CoV-2 spike protein from an advanced vaccine candidate, Bangaru et al., published by Science.org, 20 October 2020. And posted on bioRxiv.org, 06 August 2020.*
https://www.science.org/doi/10.1126/science.abe1502 (consulté 11-11-2024)
https://www.science.org/doi/epdf/10.1126/science.abe1502 (consulté 11-11-2024)



To evaluate if the multimerization phenomenon observed in the full-length spike construct played a role in virus replication, we performed pseudovirus replication assays with SARS-CoV-2 wild-type (WT) spike and two mutant spikes. In mutant 1, the loop residues 621-PVAIHADQ-628 were replaced with a glycine-serine linker to completely knockout binding to NTD and in mutant 2, residues 619-EVPV-622 of SARS-CoV-2 were reverted to residues 619-DVST-622 of SARS-CoV-1. Pseudoviruses containing either WT or mutant spikes were generated in HEK293T cells and used to infect HeLa or HeLa-ACE2 cells. While the WT and mutant 2 exhibited similar levels of infection, we observed no detectable levels of infection for mutant 1 in which all contact residues on the loop were replaced by a GS linker (Figure 4F).



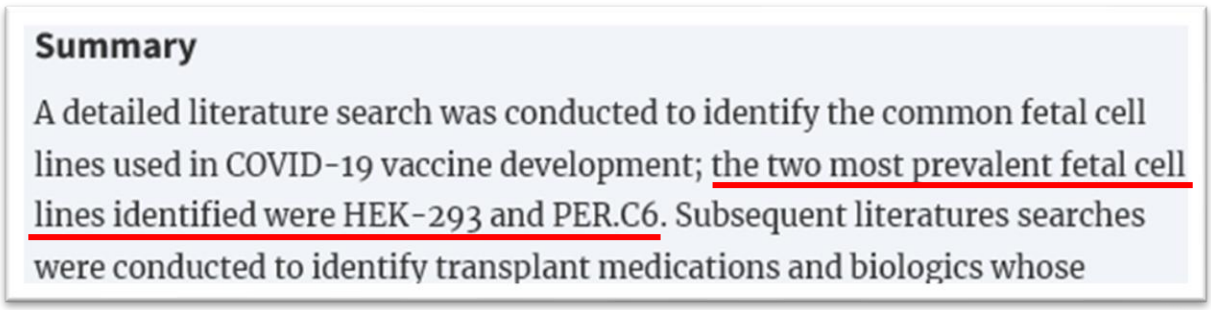
Our analysis detected glycosylation at all 22 potential N-linked glycan sequons present on SARS-CoV-2 spike (Figure 4G). Overall, there was high glycan occupancy of over >98%, with only two sites, 603 and 657, more than 5% unoccupied. Interestingly, we did not see clear glycan density at either 603 or 657 in the cryo-EM reconstruction of the 3Q-2P-FL spike. Most sites showed extensive glycan processing to complex/paucimannose type glycans, with only four sites that exhibit ≥40% oligomannose. The glycan analysis also confirmed the presence of glycans at sites 1158, 1173 and 1194 present in the membrane-proximal region of the spike not resolved by cryo-EM. The extensive site-specific glycan processing of the SARS-CoV-2 prefusion spike protein in SF9 insect cells seen here is similar to that recently reported for the spike protein produced in mammalian HEK293F cells (27).

*Structural analysis of full-length SARS-CoV-2 spike protein from an advanced vaccine candidate, Bangaru et al., published by Science.org, 20 October 2020. And posted on bioRxiv.org, 06 August 2020.*
https://www.biorxiv.org/content/10.1101/2020.08.06.234674v1.full (consulté 11-11-2024)
https://www.biorxiv.org/content/10.1101/2020.08.06.234674v1.full.pdf (consulté 11-11-2024)

## Conclusion

Pour résumer: **HEK 293** et **PER.C6** sont les lignées cellulaires fœtales les plus couramment utilisées dans le développement des vaccins COVID-19.

L'Université d'Oxford est également parvenue à cette conclusion:



**Summary**

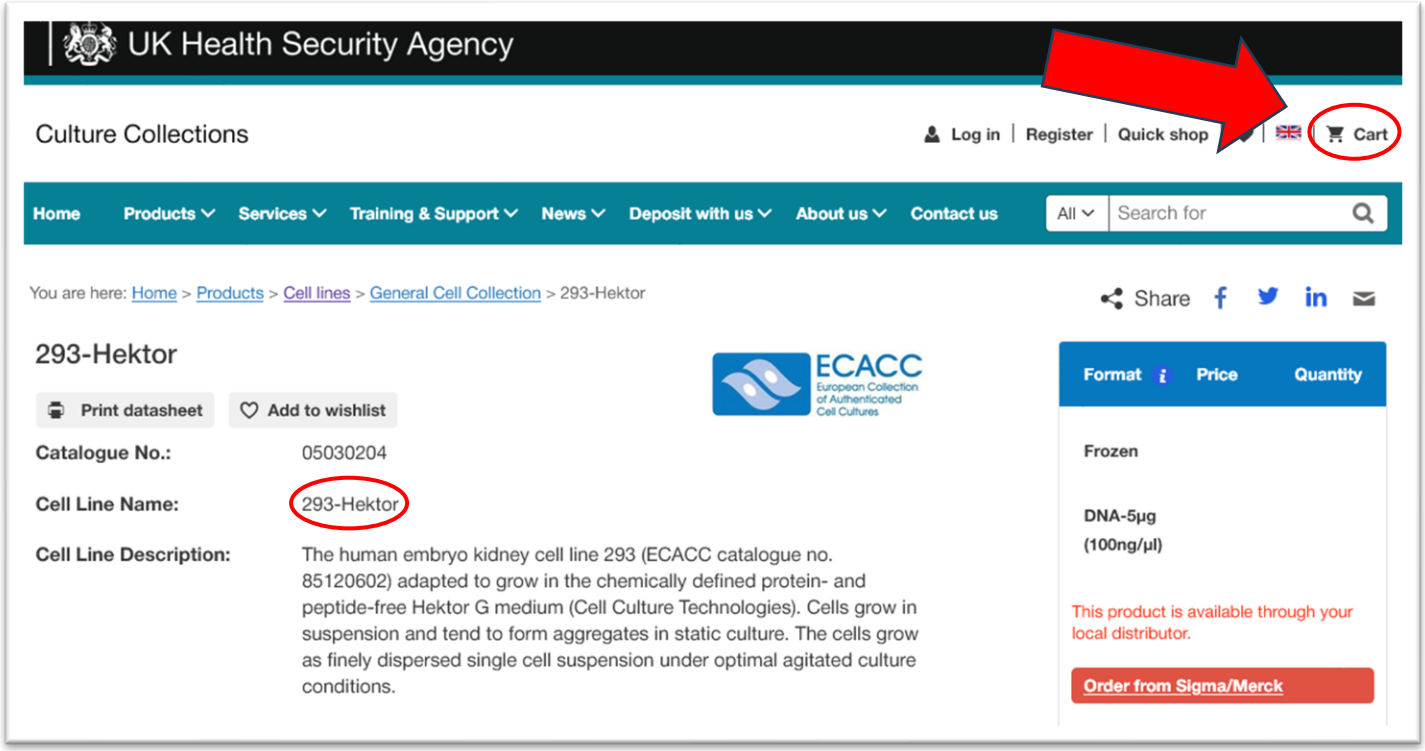
A detailed literature search was conducted to identify the common fetal cell lines used in COVID-19 vaccine development; the two most prevalent fetal cell lines identified were HEK-293 and PER.C6. Subsequent literatures searches were conducted to identify transplant medications and biologics whose

***A review of fetal cell lines used during drug development: Focus on COVID-19 vaccines**, transplant medications, and biologics, Durant et al., published by **American Journal of Health-System Pharmacy**, Volume 81, Issue 13, 1 July 2024, Pages e336–e344, https://doi.org/10.1093/ajhp/zxae031. And online on academic.oup.com, 13 February 2024,* https://academic.oup.com/ajhp/article-abstract/81/13/e336/7606814?login=false.

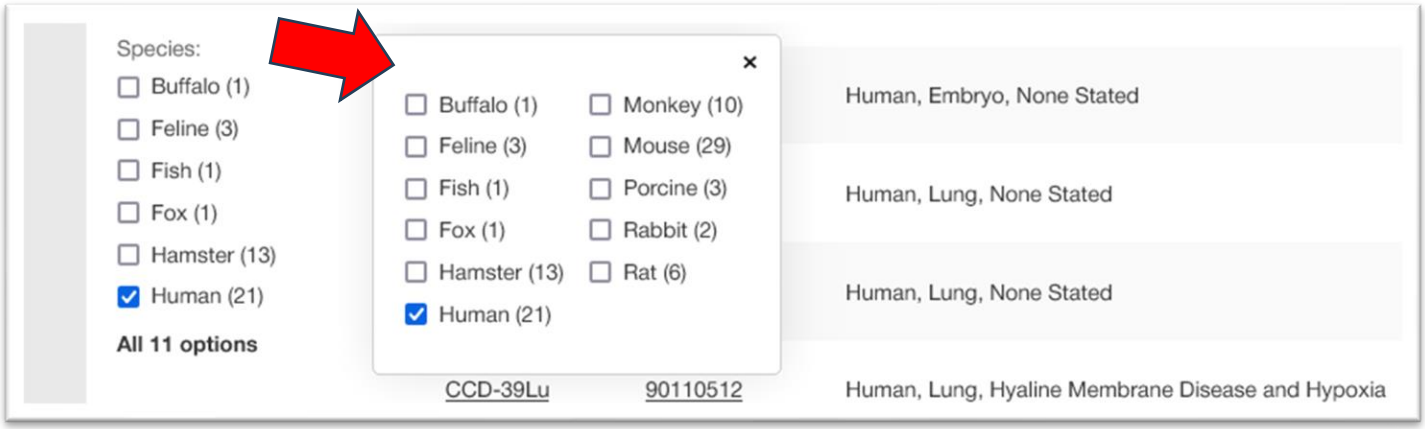
**Qui fait cela ?**

Il est important de noter que les entreprises privées ne sont pas les seules à être impliquées dans la fourniture et le commerce de lignées de cellules fœtales dérivées de cellules de bébés avortés. Les gouvernements font de même.

Par exemple, vous pouvez les acheter auprès du gouvernement britannique à l'adresse suivante: culturecollections.org.uk.




Ici, vous pouvez commander la lignée cellulaire de votre choix. Lorsque vous avez trouvé la lignée cellulaire que vous souhaitez, il vous suffit de la déposer dans votre panier. La lignée cellulaire **HEK 293** par exemple (**293-Hector**).




*UK government website:* https://www.culturecollections.org.uk/nop/product/293-hektor *(consulté 13-11-2024)*

**Qu'est-ce que cela nous apprend ?**

Voilà où nous en sommes. L'industrie pharmaceutique, les universités et les gouvernements forment ensemble un **complexe médico-industriel** qui fonctionne sans aucun respect pour le caractère sacré de la vie humaine.

Les **enfants inestimables** et **irremplaçables que Dieu nous donne** sont maintenant utilisés dans la production de masse de produits pharmaceutiques et sont échangés comme des marchandises.

# L'utilisation de lignées cellulaires dérivées de **cellules de bébés avortés** dans les vaccins COVID-19

| Fabricant | Recherche et développement | Production de masse |
|---|---|---|
| Pfizer BIONTECH | HEK 293  | Aucun  |
| moderna messenger therapeutics | HEK 293  | Aucun  |
| AstraZeneca | MRC-5, HEK 293  | HEK 293  |
| Johnson & Johnson janssen | PERC.6, HEK 293  | PERC.6  |
| NOVAVAXAB | HEK 293  | Aucun  |

**Liste des lignées cellulaires courantes dérivées de bébés avortés:**

- **HEK 293**, cellules rénales embryonnaires humaines, souvent appelées HEK-293, cellules 293, ou cellules HEK, est une lignée cellulaire spécifique dérivée du **tissu rénal d'un fœtus avorté** et cultivé dans une culture de tissus.
- **WI-38** est une lignée cellulaire humaine diploïde composée de fibroblastes dérivés du **tissu pulmonaire d'un fœtus féminin avorté**.
- **MRC-5** (Medical Research Council cell strain 5) est une lignée cellulaire humaine diploïde composée de fibroblastes provenant du **tissu pulmonaire d'un fœtus mâle avorté de 14 semaines**.
- **PERC.6** est une lignée cellulaire dérivée de **cellules rétiniennes embryonnaires humaines**.

Je tiens à remercier **l'Institut Charlotte Lozier** pour les recherches essentielles qu'il a menées sur cette question. http://lozierinstitute.org/wp-content/uploads/2020/12/CHART-Analysis-of-COVID-19-Vaccines-02June21.pdf *(*consulté *13-11-2024)*