COMUNICACIÓN CIENTÍFICA:

Comunicaciones orales y diseño de poster

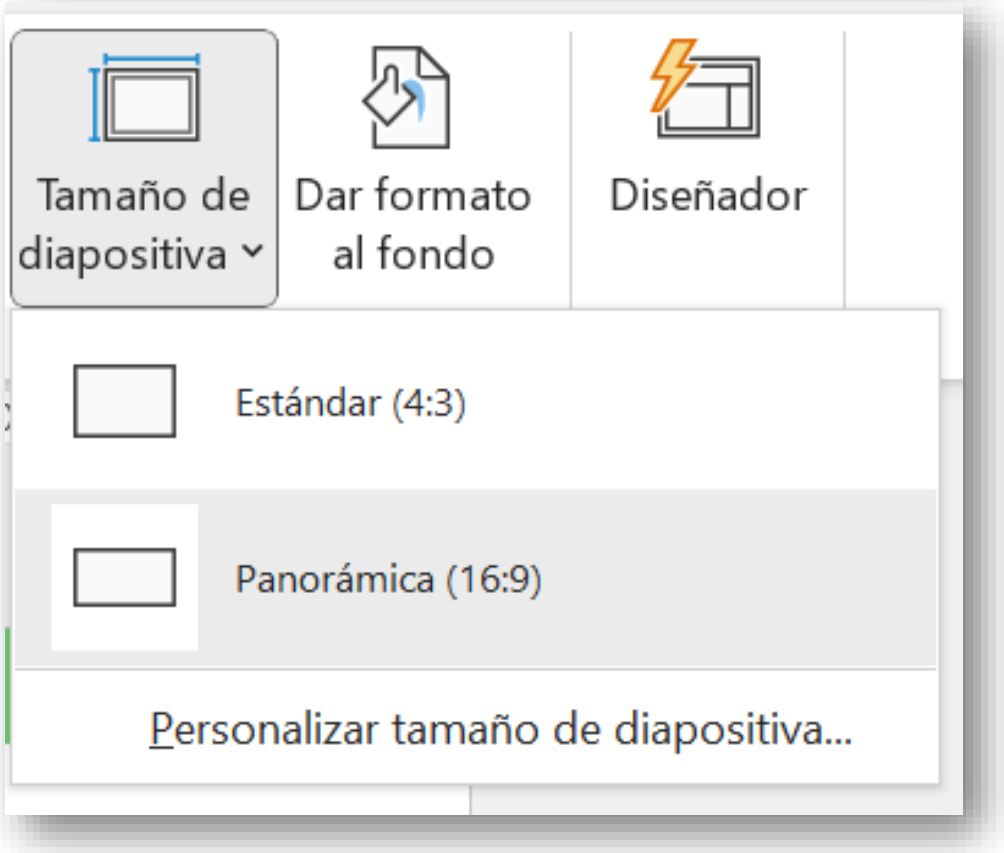
Álvaro Morales Molina

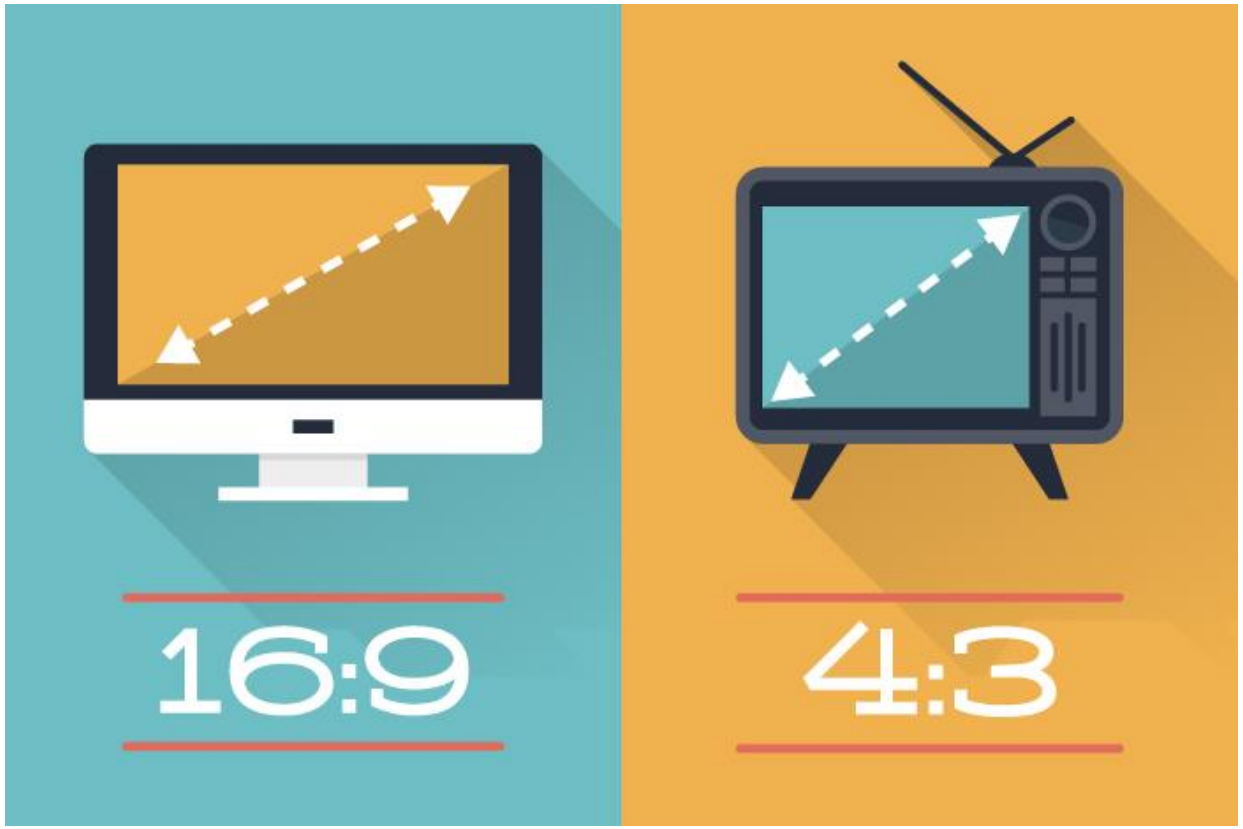
@Fesisisimo

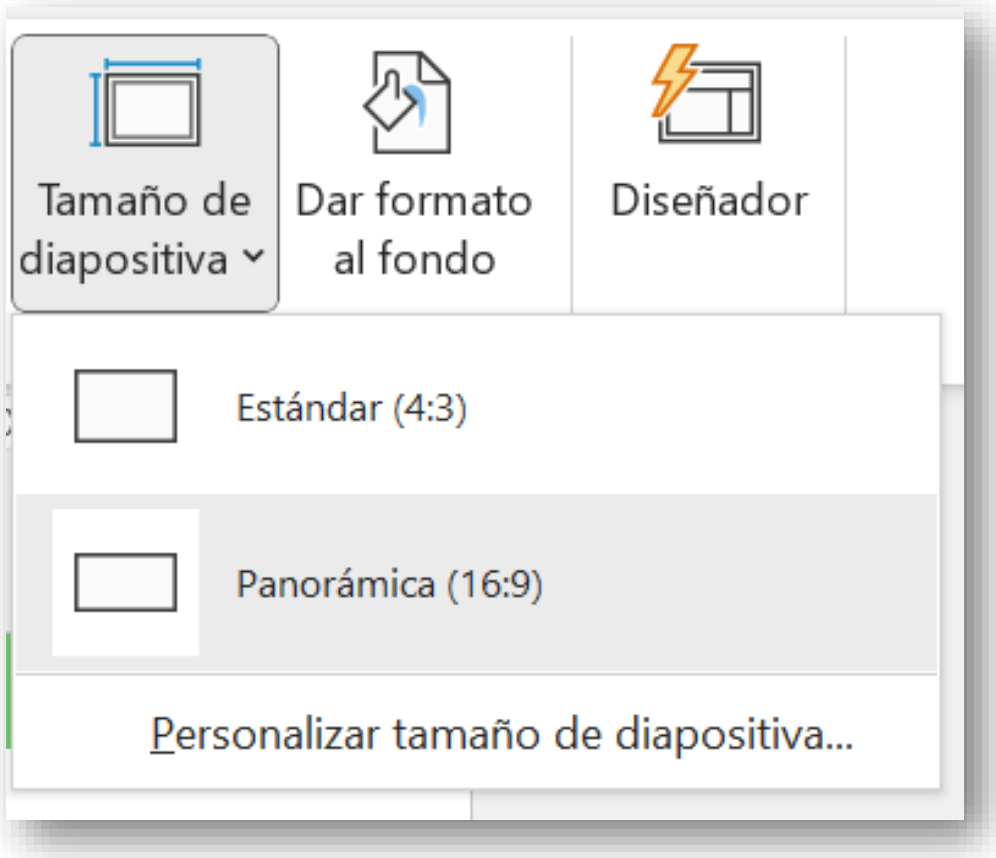
Instituto de Salud Carlos III

FORMATO

Presentación


Tamaño de diapositiva
Dar formato al fondo
Diseñador
Estándar (4:3)
Panorámica (16:9)
Personalizar tamaño de diapositiva...


16:9
4:3


Tamaño de diapositiva
Dar formato al fondo
Diseñador
Estándar (4:3)
Panorámica (16:9)
Personalizar tamaño de diapositiva...

INTRODUCCIÓN

Presentación

Presenta el problema

Da datos

¿A cuántas personas afecta?

Presenta el problema

Da datos

¿A cuántas personas afecta?

Explica lo necesario

(de lo más grande a lo más pequeño)

Sé visual

Smart.servier, Biorender, profesional…

Cáncer

↓

Cáncer infantil

↓

Inmunoterapias

↓

Viroterapia oncolítica

↓

Nuestro virus oncolítico

↓

Tratamiento Celyvir

(células y virus)

Presenta el problema

Da datos

¿A cuántas personas afecta?

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(de lo más grande a lo más pequeño)

Sé visual

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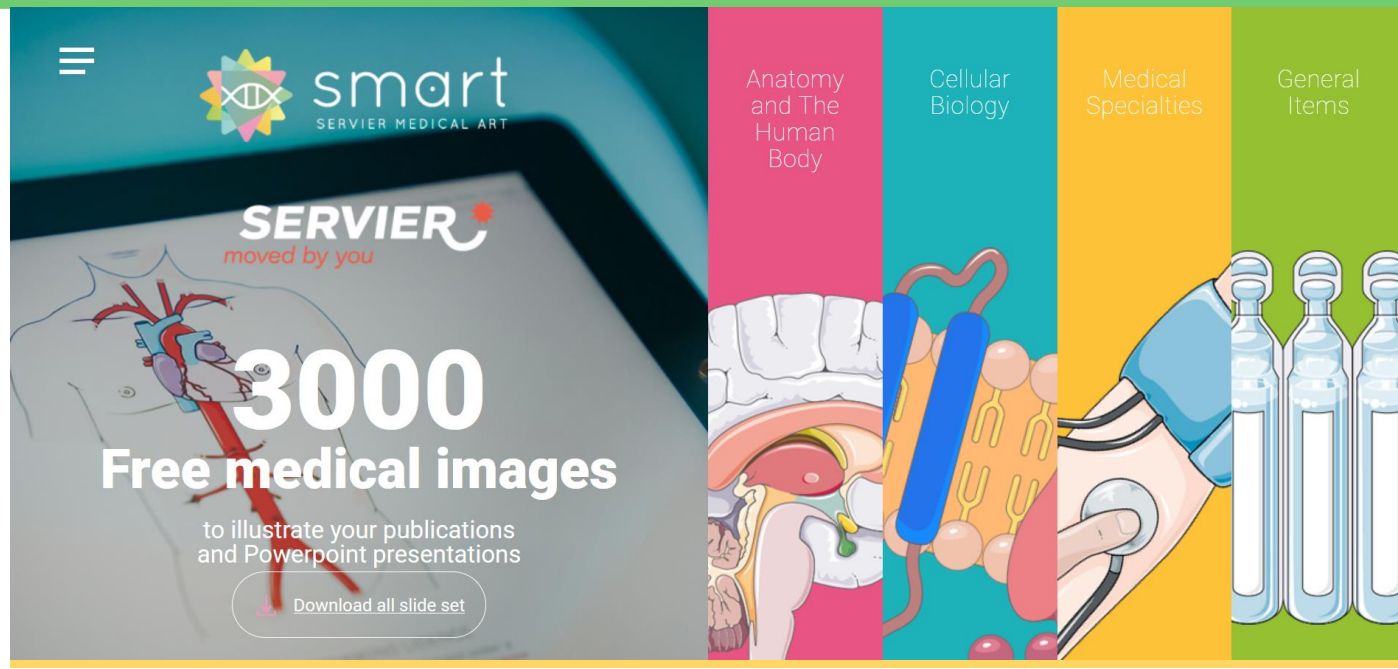
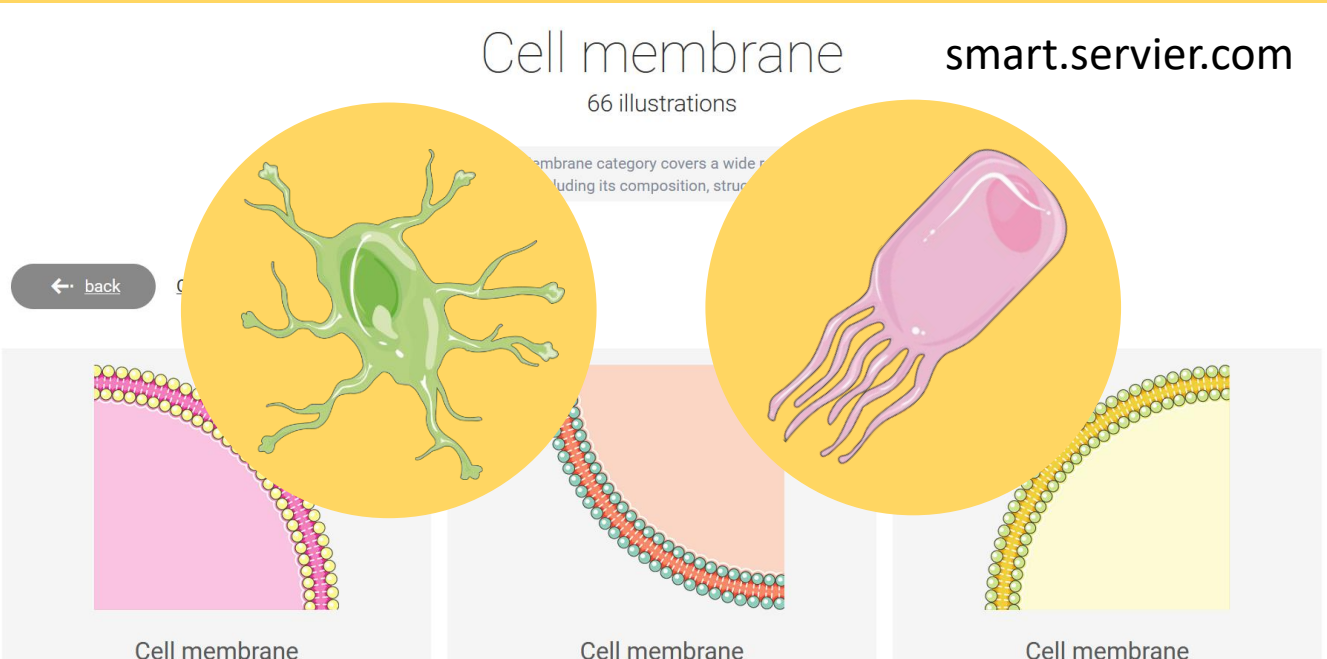




Presenta el problema

Da datos

¿A cuántas personas afecta?

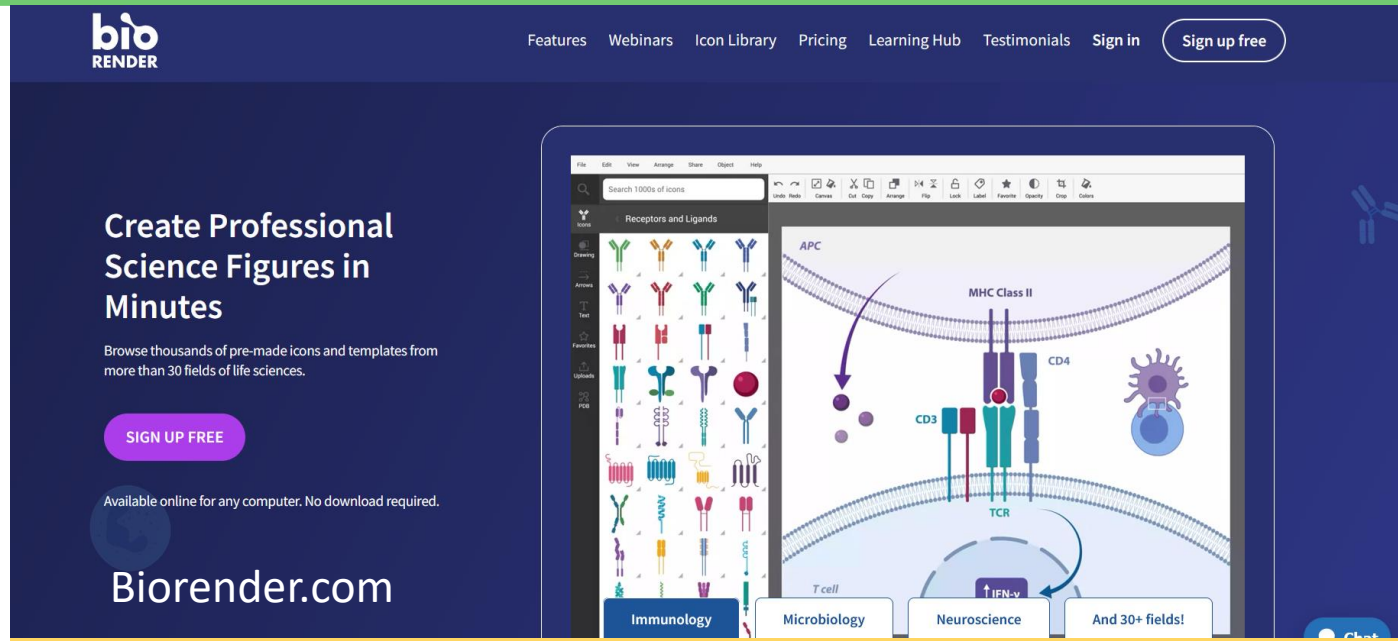
Explica lo necesario

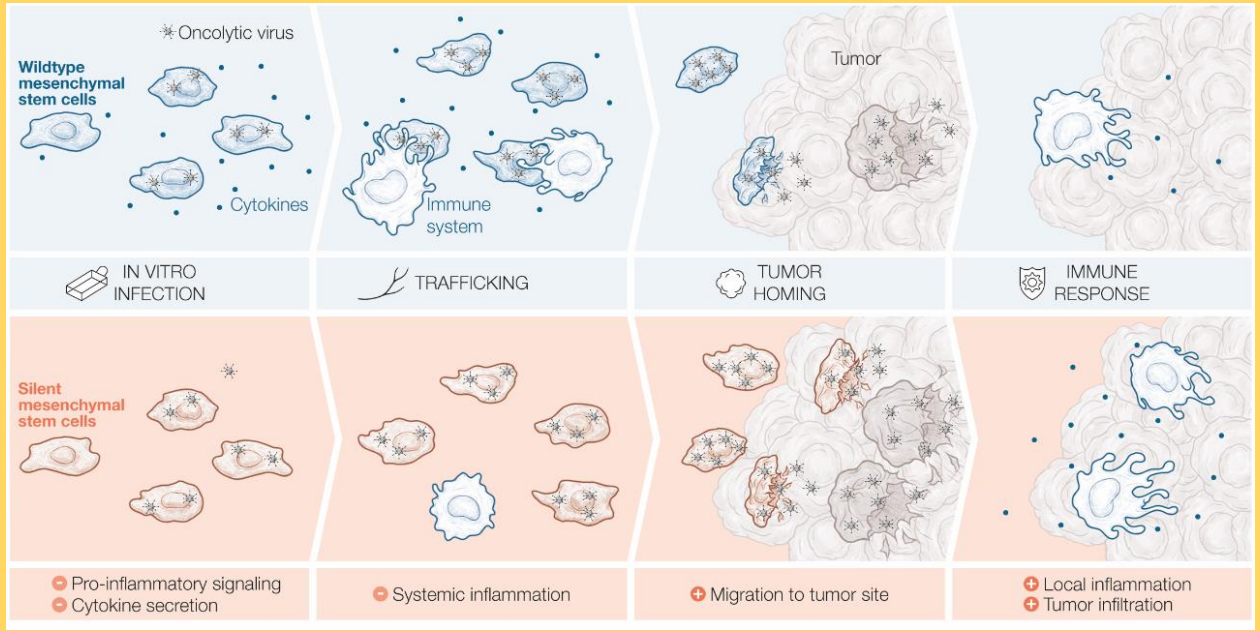
(de lo más grande a lo más pequeño)

Sé visual

Smart.servier, Biorender, profesional…

Dedícale el tiempo necesario





EJEMPLO

Presentación

19,3 millones de casos diagnosticados de cáncer en el mundo

10 millones de muertes relacionadas con cáncer

429.000 nuevos casos diagnosticados de cáncer infantil en el mundo

110.000 de muertes relacionadas con cáncer infantil

Principal causa de muerte en España en **niños de 1-14 años**
(Instituto Nacional de Estadística)

Organización Mundial de la Salud (OMS), IARC
H Sung et al. *CA Cancer J Clin*. 2021. 71(3):209-249

19,3 millones de casos diagnosticados de cáncer en el mundo

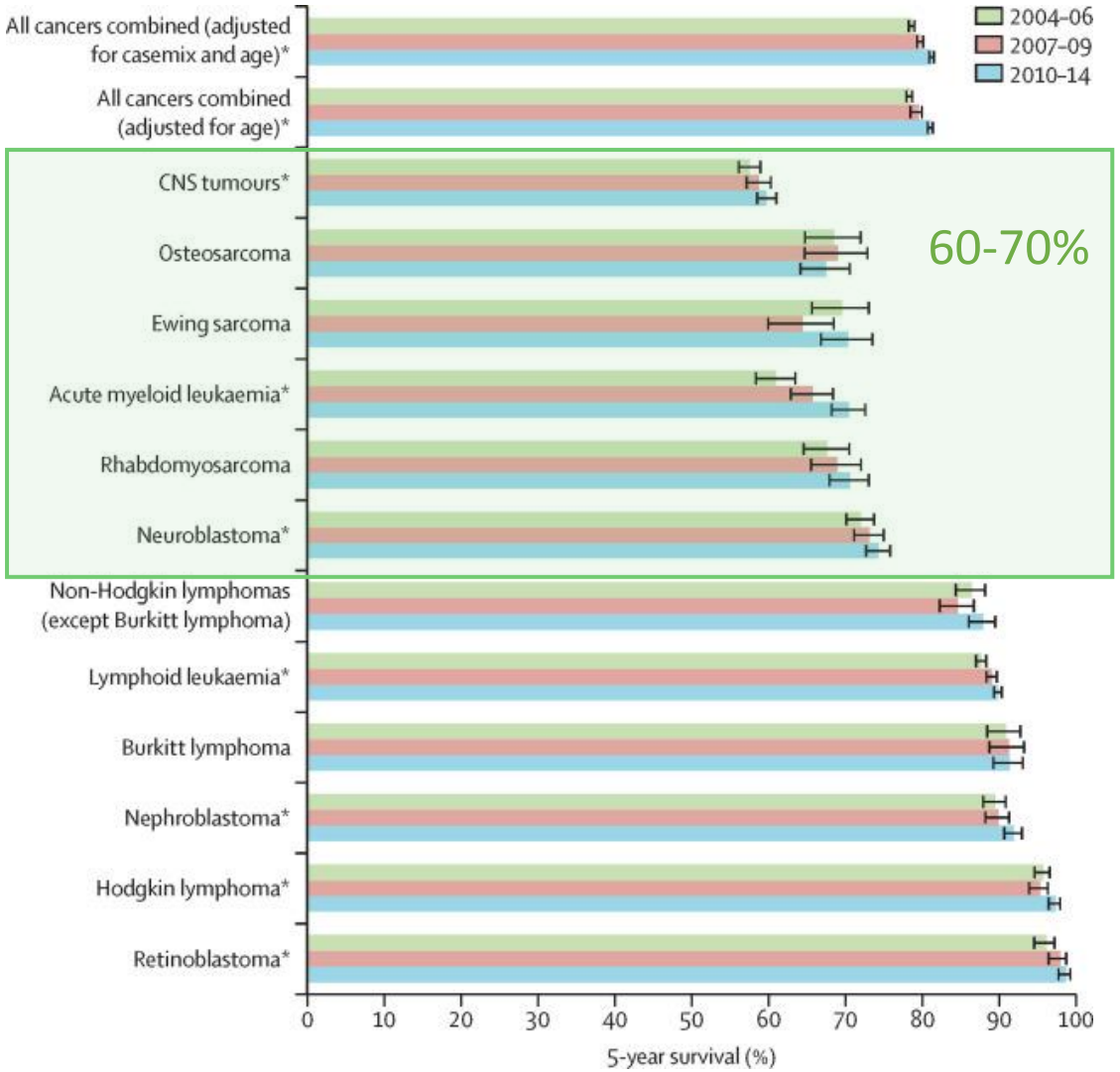
10 millones de muertes relacionadas con cáncer

429.000 nuevos casos diagnosticados de cáncer infantil en el mundo

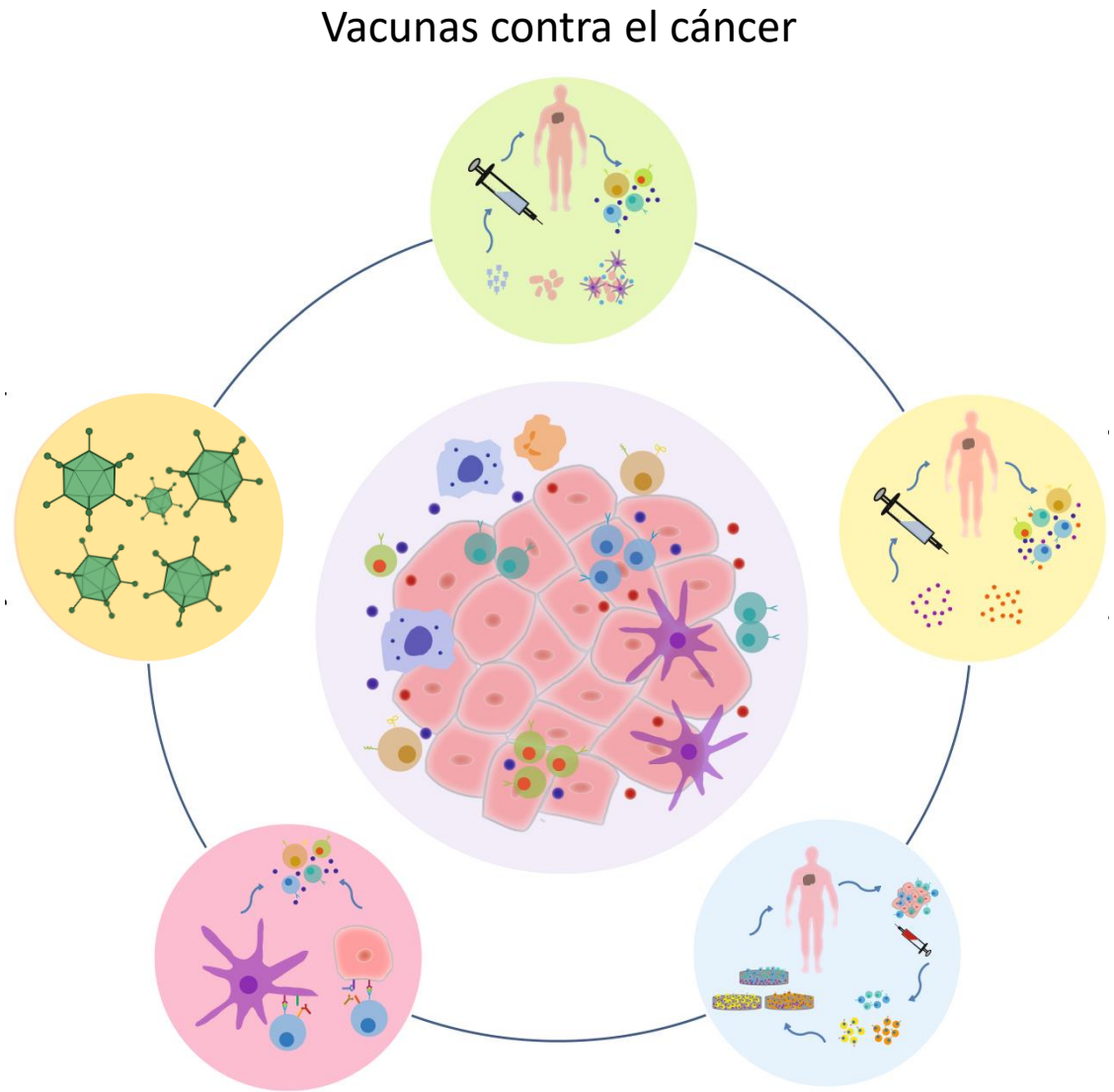
110.000 de muertes relacionadas con cáncer infantil

Principal causa de muerte en España en **niños de 1-14 años**
(Instituto Nacional de Estadística)

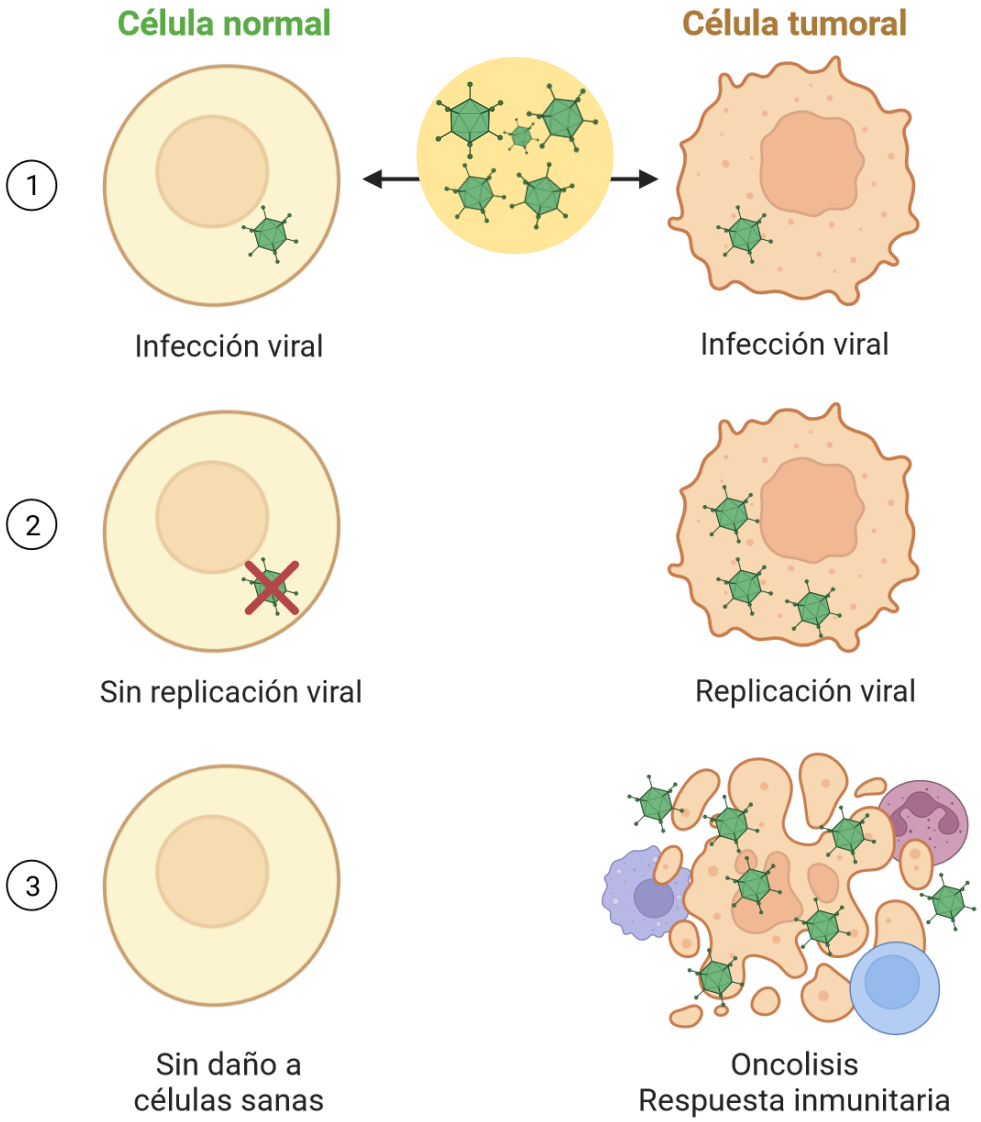
En Europa, la **supervivencia** a 5 años ha aumentado hasta el 80%, pero la cifra disminuye en casos de tumores sólidos



Estudio EUROCARE-6
L Botta et al. *Lancet Oncol*. 2022 Dec; 23(12):1525-1536

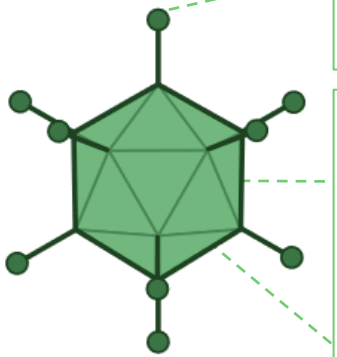


Zhang Y, Zhang Z. *Cell Mol Immunol*. 2020 Aug;17(8):807-821. doi: 10.1038/s41423-020-0488-6. Epub 2020 Jul 1.



Virus capaces de replicarse selectivamente en células cancerosas sin dañar a las células no replicativas

Adenovirus oncolítico (OAd) ICOVIR-5



Motivo RGD
(Arg-Gly-Asp) en el loop-H1 del *knob* de la fibra viral

Tropismo tumoral
Mayor infectividad

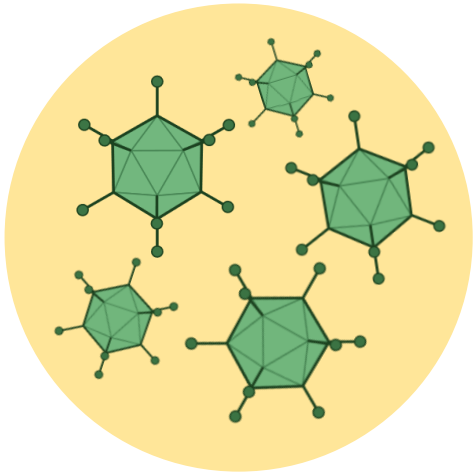
E1
Deleción Δ24 en el sitio de unión pRb

Sustitución de parte del promotor E1 por promotor inducible por E2F

Selectividad tumoral

Adaptado de: Grünewald TG, (…), Morales-Molina A et al. *EMBO Molecular Medicine*. 2020

VIRUS DESNUDO



Limitaciones

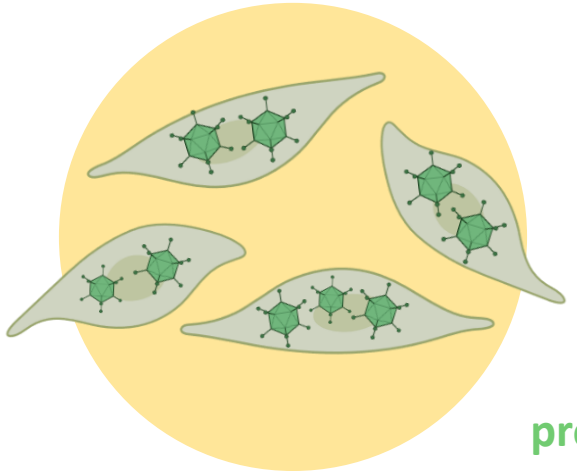
Administración intratumoral

Respuesta antiviral

Sin tropismo tumoral

Menor eficacia en metástasis

VEHÍCULOS CELULARES



MSC (Células progenitoras mesenquimales)

Ventajas

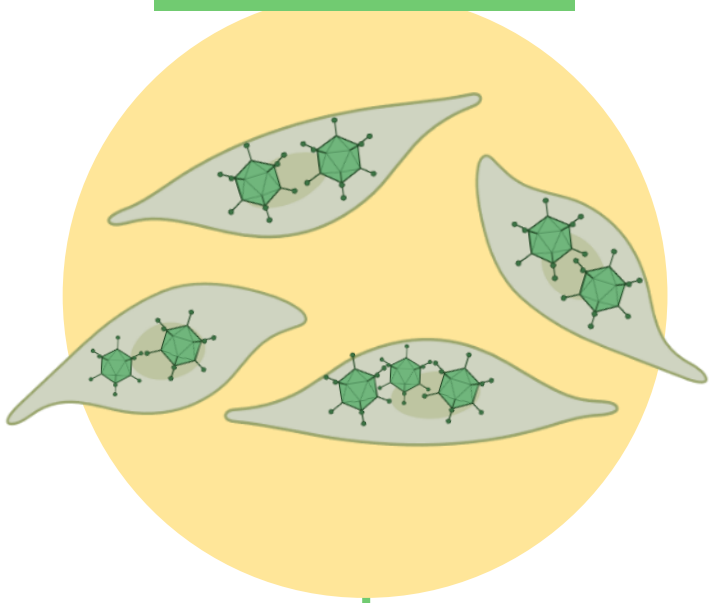
Administración sistémica (i.v.)

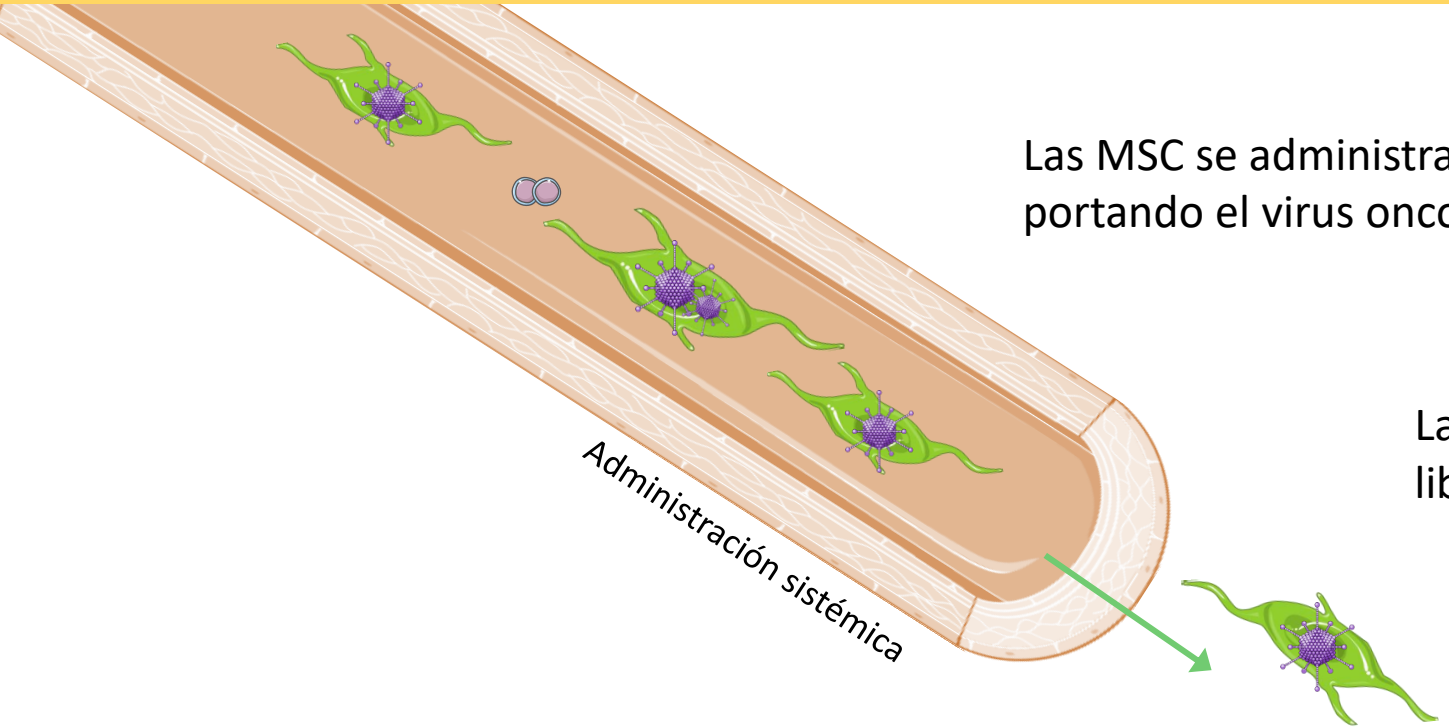
MSC protege al virus del sistema inmunitario

MSC presentan tropismo por el tumor

Mayor posibilidad de eficacia en metástasis

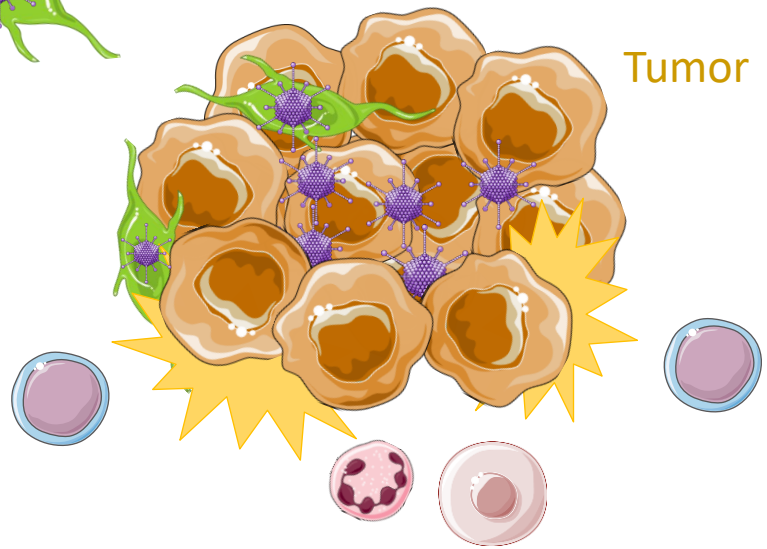
CELYVIR





Las MSC se administran vía **intravenosa**, portando el virus oncolítico

Las MSC **migran al tumor**, donde liberan el virus oncolítico

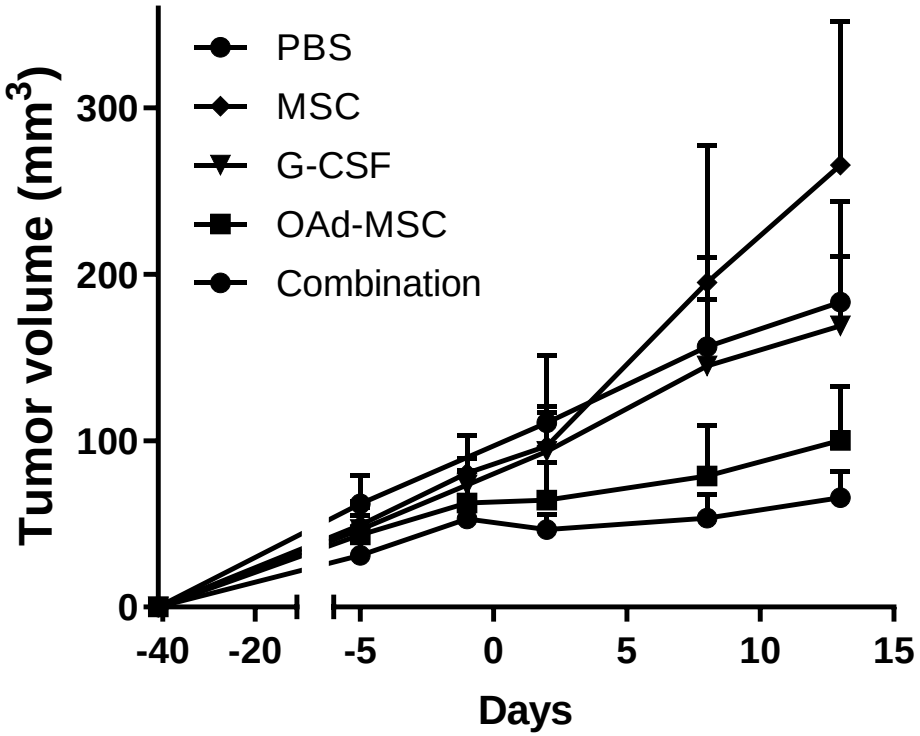


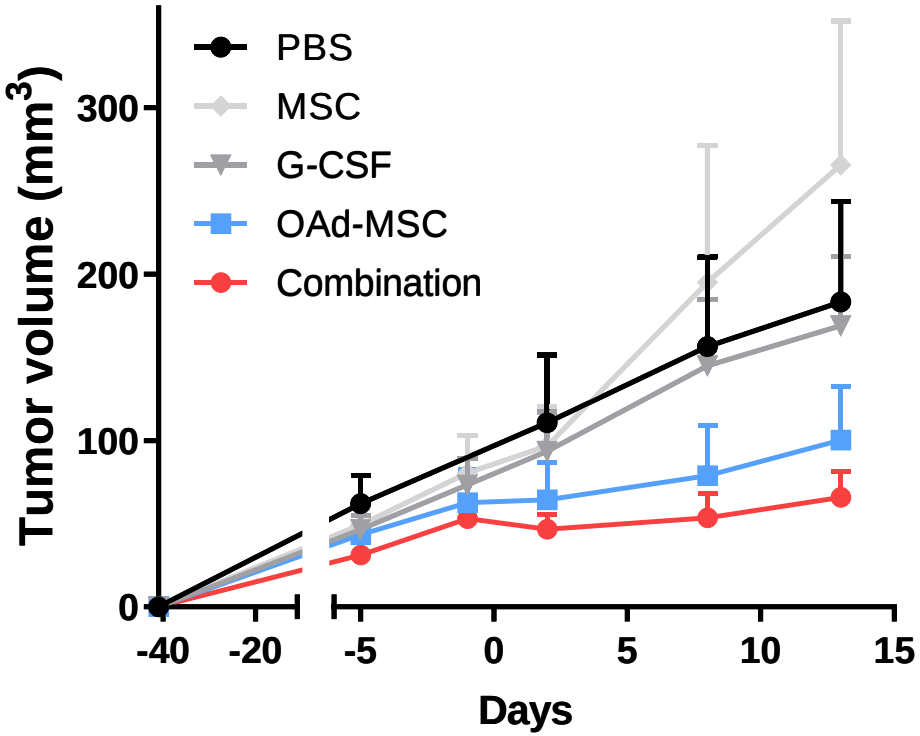
El **virus se replica** en las células tumorales, lisándolas

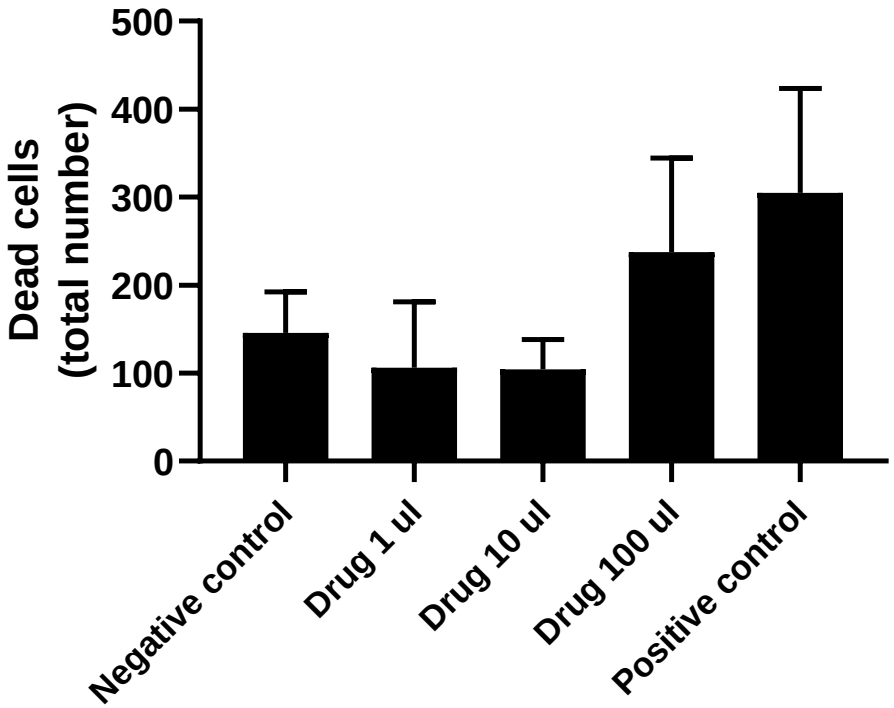
La infección viral y muerte celular activan la **respuesta inmunitaria**

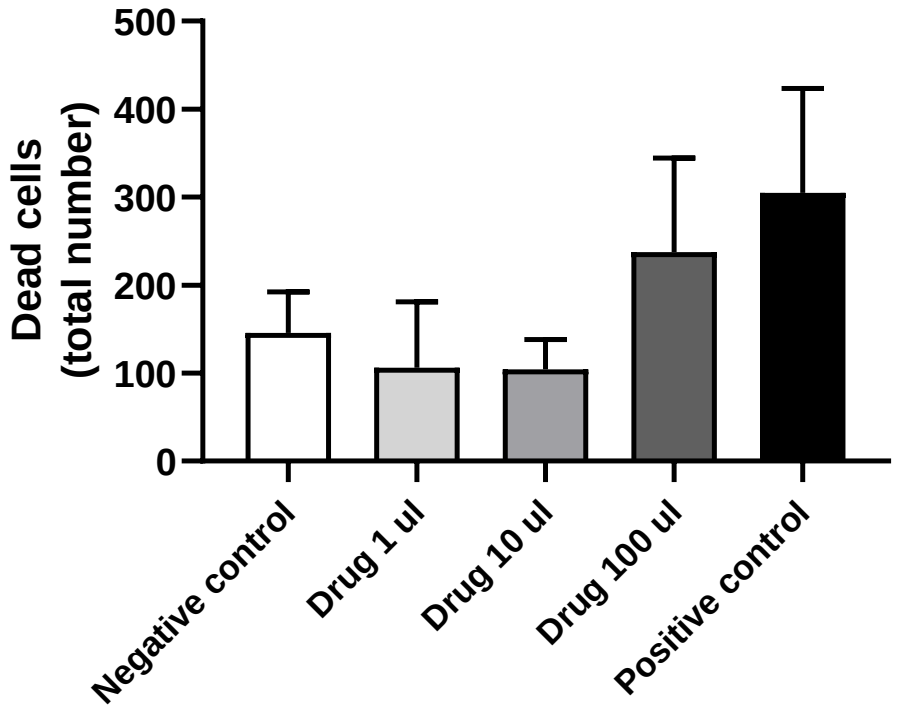
RESULTADOS

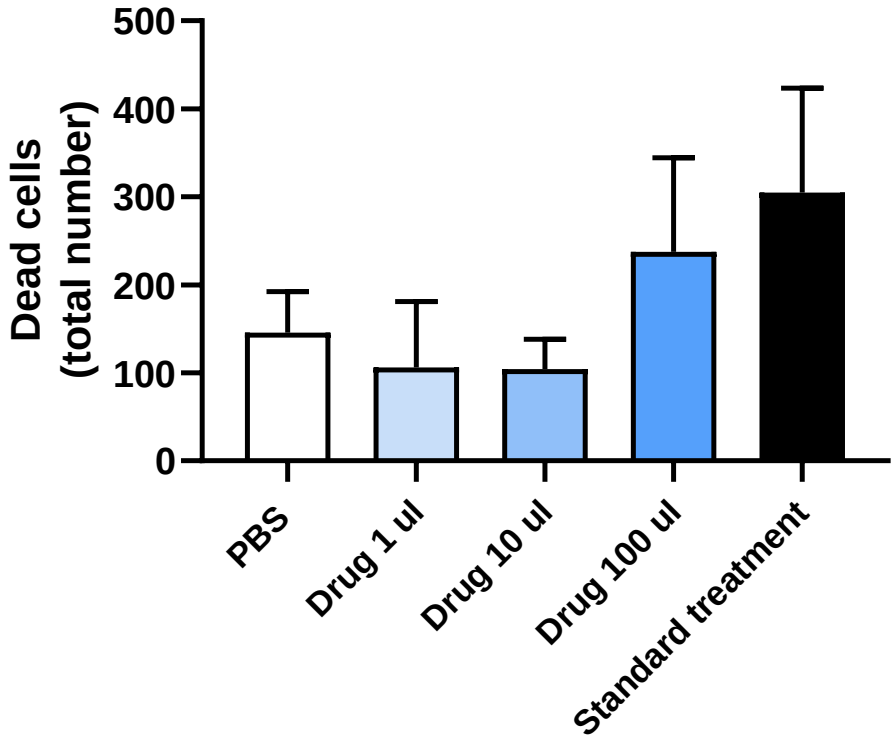
Presentación

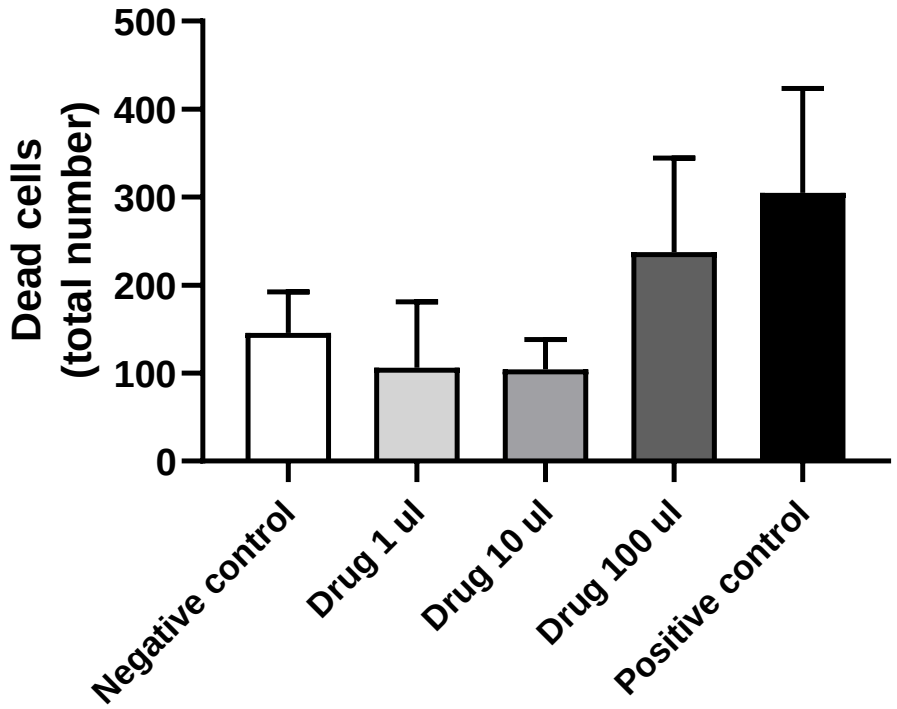

PBS
MSC
G-CSF
OAd-MSC
Combination
Tumor volume (mm3)
300
200
100
0
-40
-20
-5
0
5
10
15
Days

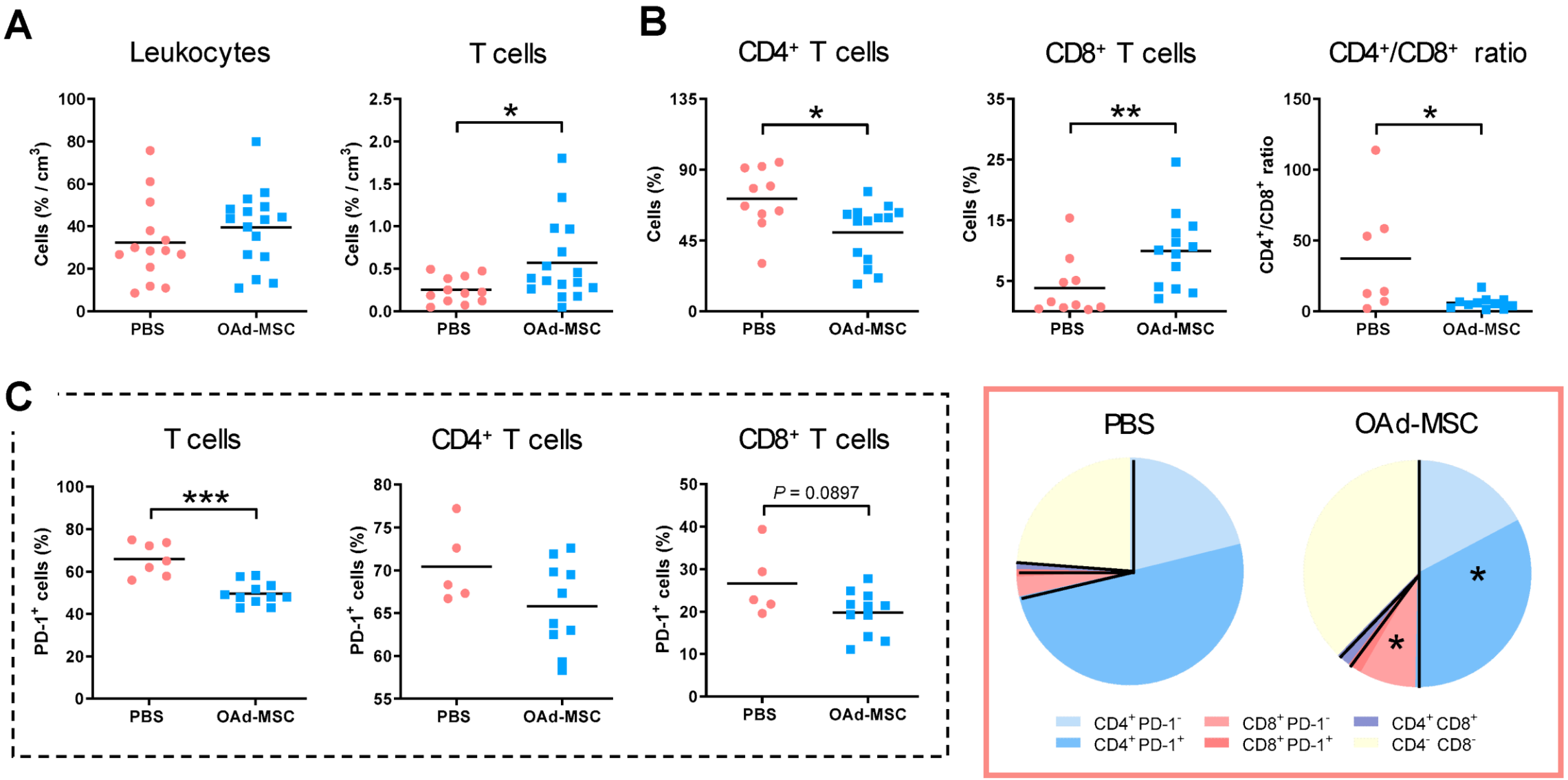

PBS
MSC
G-CSF
OAd-MSC
Combination
Tumor volume (mm3)
300
200
100
0
-40
-20
-5
0
5
10
15
Days


Dead cells
(total number)
500
400
300
200
100
0
Negative control
Drug 1 ul
Drug 10 ul
Drug 100 ul
Positive control


Dead cells
(total number)
500
400
300
200
100
0
Negative control
Drug 1 ul
Drug 10 ul
Drug 100 ul
Positive control

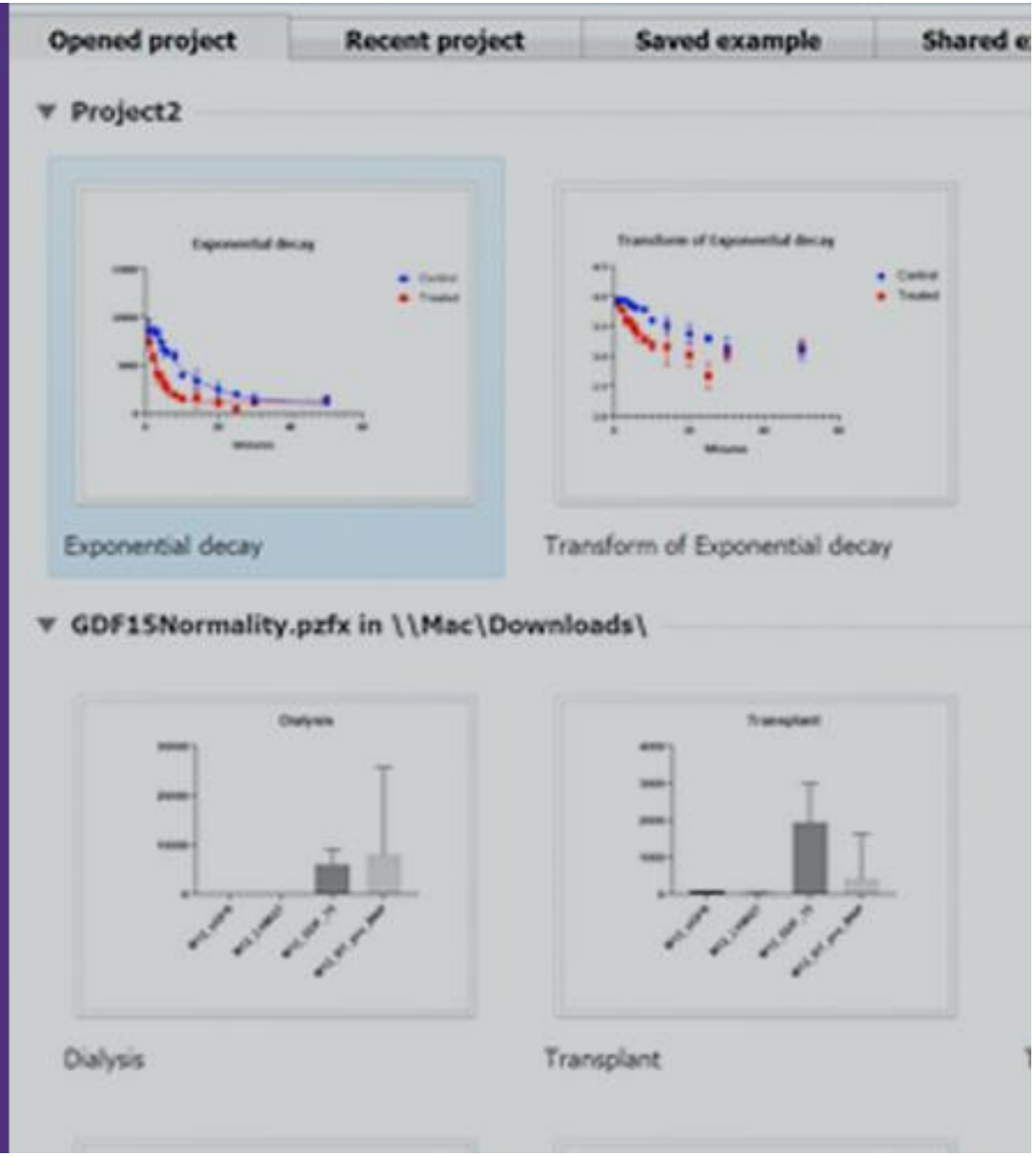

Dead cells
(total number)
500
400
300
200
100
0
PBS
Drug 1 ul
Drug 10 ul
Drug 100 ul
Standard treatment


Dead cells
(total number)
500
400
300
200
100
0
Negative control
Drug 1 ul
Drug 10 ul
Drug 100 ul
Positive control

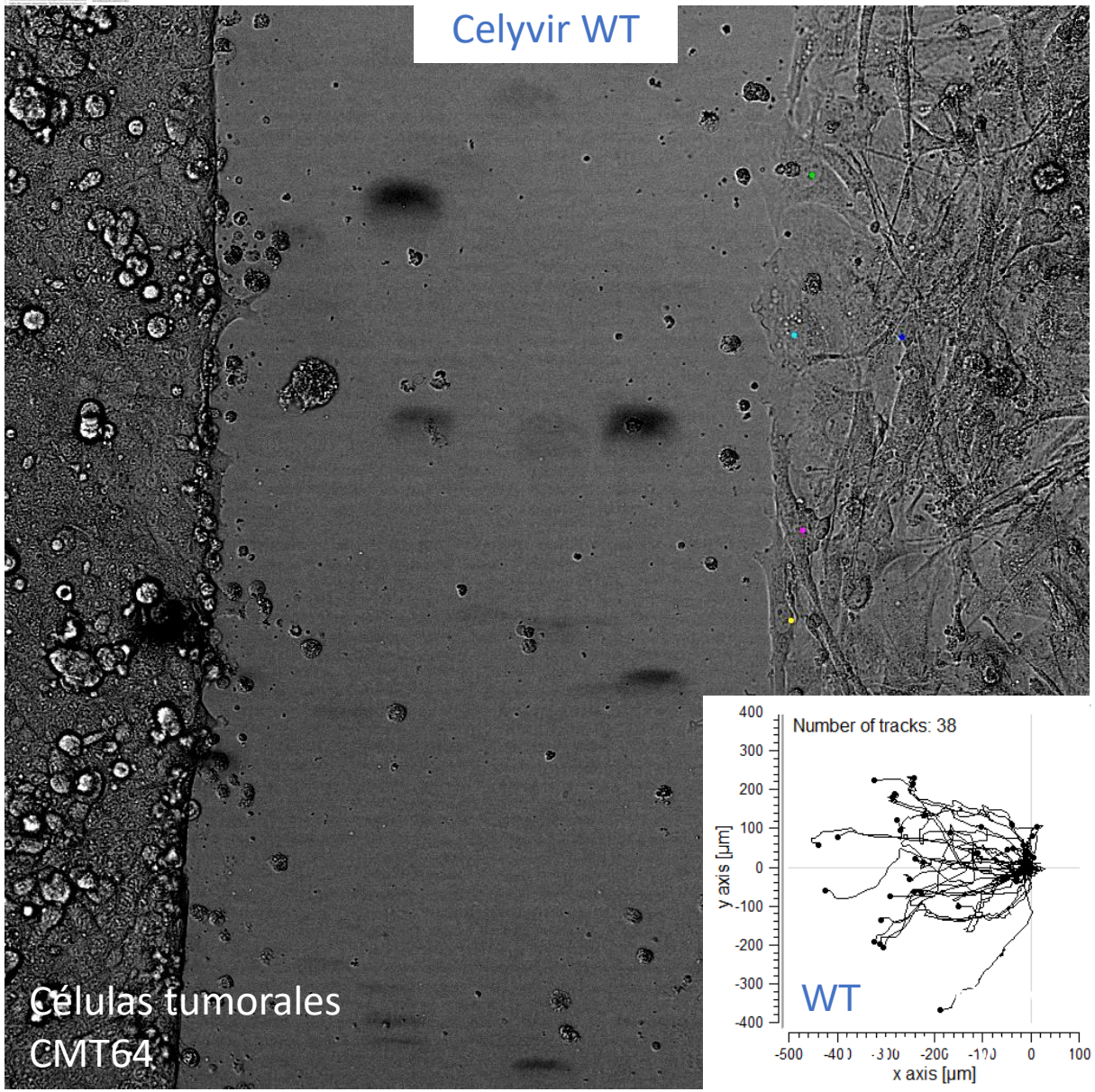

A
Leukocytes
Cells (% / cm3)
100
80
60
40
20
0
PBS
OAd-MSC
T cells
Cells (% / cm3)
2.5
2.0
1.5
1.0
0.5
0.0
*
PBS
OAd-MSC
B
CD4+ T cells
Cells (%)
135
90
45
0
*
PBS
OAd-MSC
CD8+ T cells
Cells (%)
35
25
15
5
**
PBS
OAd-MSC
CD4+/CD8+ ratio
CD4+/CD8+ ratio
150
100
50
0
*
PBS
OAd-MSC
C
T cells
PD-1+ cells (%)
100
80
60
40
20
0
***
PBS
OAd-MSC
CD4+ T cells
PD-1+ cells (%)
80
75
70
65
60
55
PBS
OAd-MSC
CD8+ T cells
PD-1+ cells (%)
50
40
30
20
10
0
P = 0.0897
PBS
OAd-MSC
PBS
OAd-MSC
*
*
CD4+ PD-1-
CD4+ PD-1+
CD8+ PD-1-
CD8+ PD-1+
CD4+ CD8+
CD4- CD8-

GraphPad

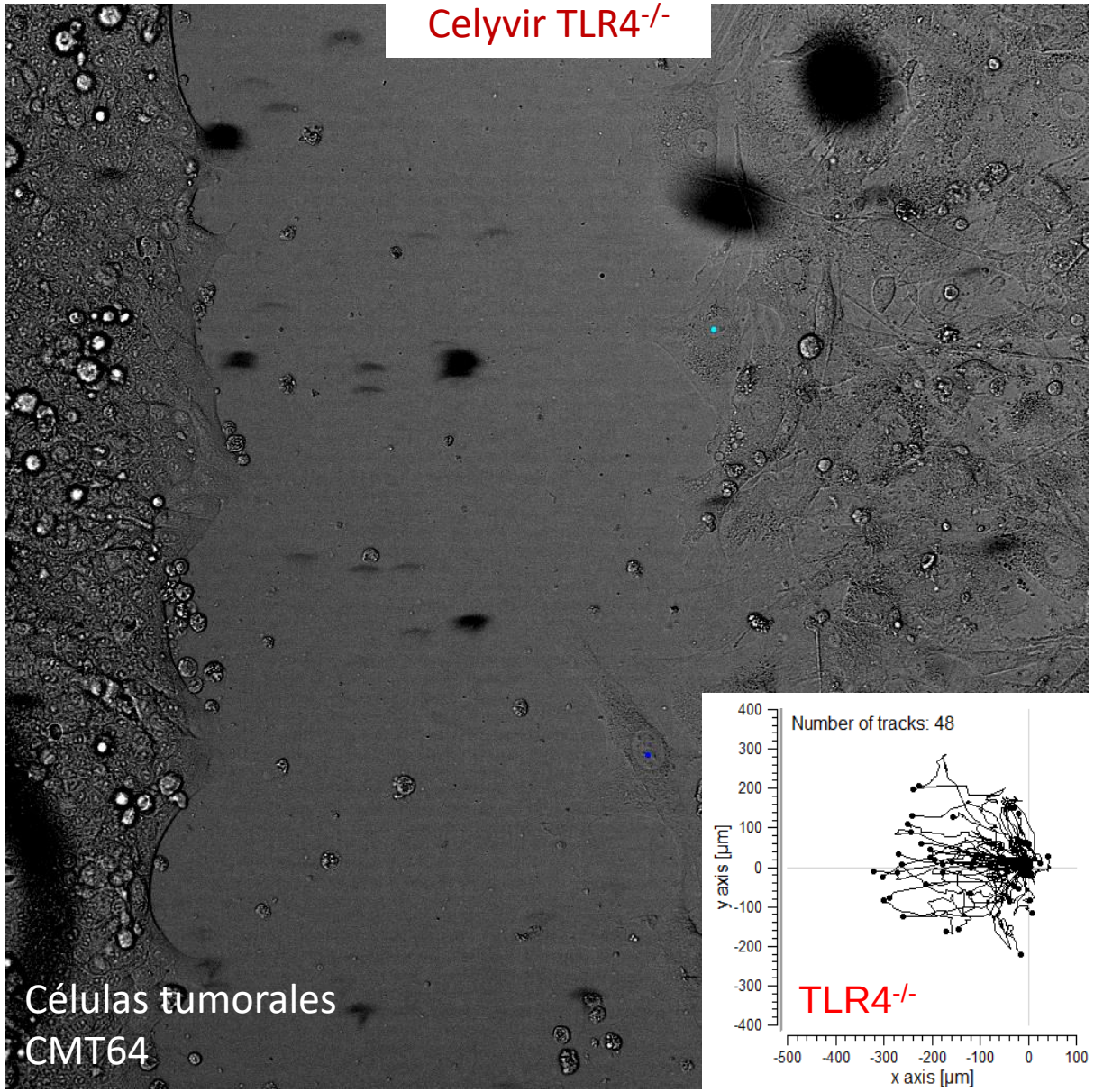
Prism



Celyvir WT



Celyvir TLR4$^{-/-}$



ANIMACIONES
¿SÍ O NO?

FINAL

Presentación

Conclusiones

Si es necesario / Recopila

Agradecimientos

Sin dedicar 3 minutos / Contacto

¿Preguntas?

ESTILO Y DISEÑO

Presentación

graphic design is my passion.

Hazlo sencillo

Formato adaptable

Reutiliza material

Utiliza fondo blanco

COMUNICACIÓN ORAL

frente al público

Libera tensión

Sitúate, coge aire

Sonríe

Libera tensión

Sitúate, coge aire

Sonríe

El power point va a fallar
(no es tu culpa)

Apréndete bien tu primera diapositiva

Dale emoción, hazlo personal
(lanza preguntas, cambia de tono, cuenta tu historia)

Practica, practica, practica
(y no te irás del tiempo)

COMUNICACIÓN ORAL

Preguntas y respuestas

Papel y boli

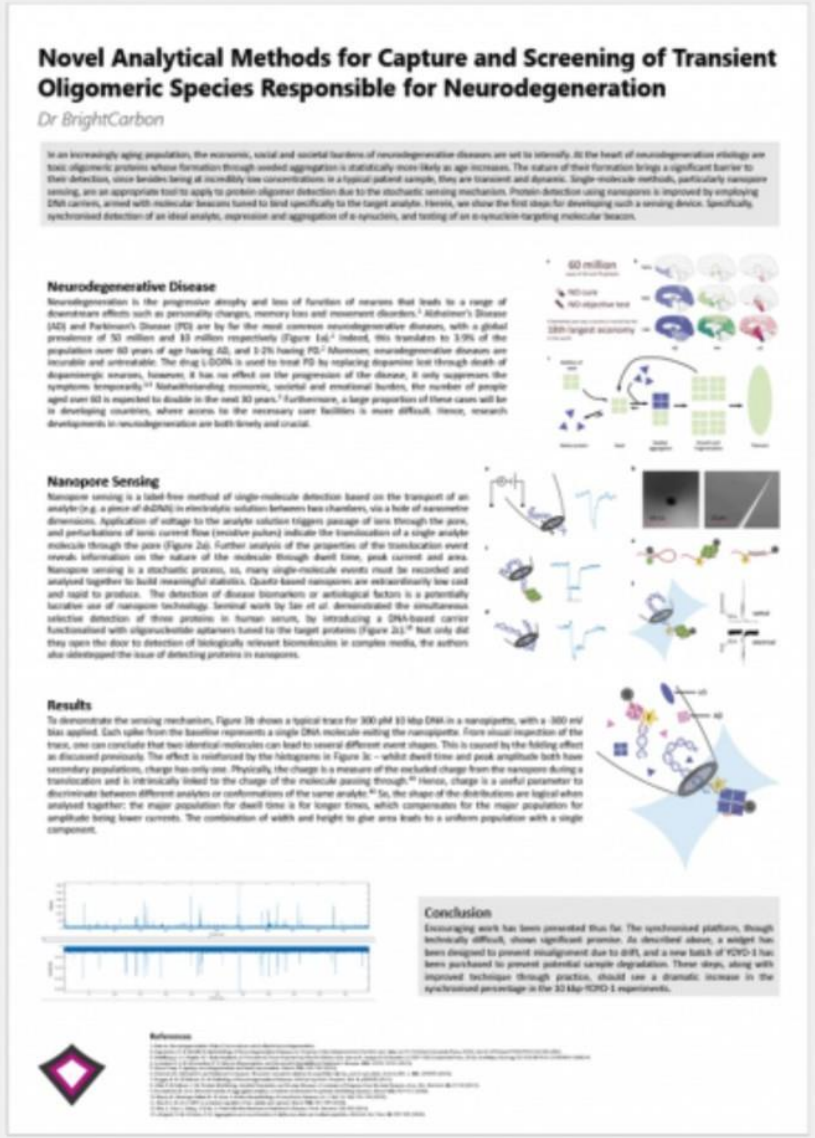
Date tiempo, piensa tu respuesta

“No lo sé”

El truquito de las diapos extra

POSTERS CIENTÍFICOS

'I can hardly read this poster' → 'Cool research, tell me more!'



Novel Analytical Methods for Capture and Screening of Transient Oligomeric Species Responsible for Neurodegeneration

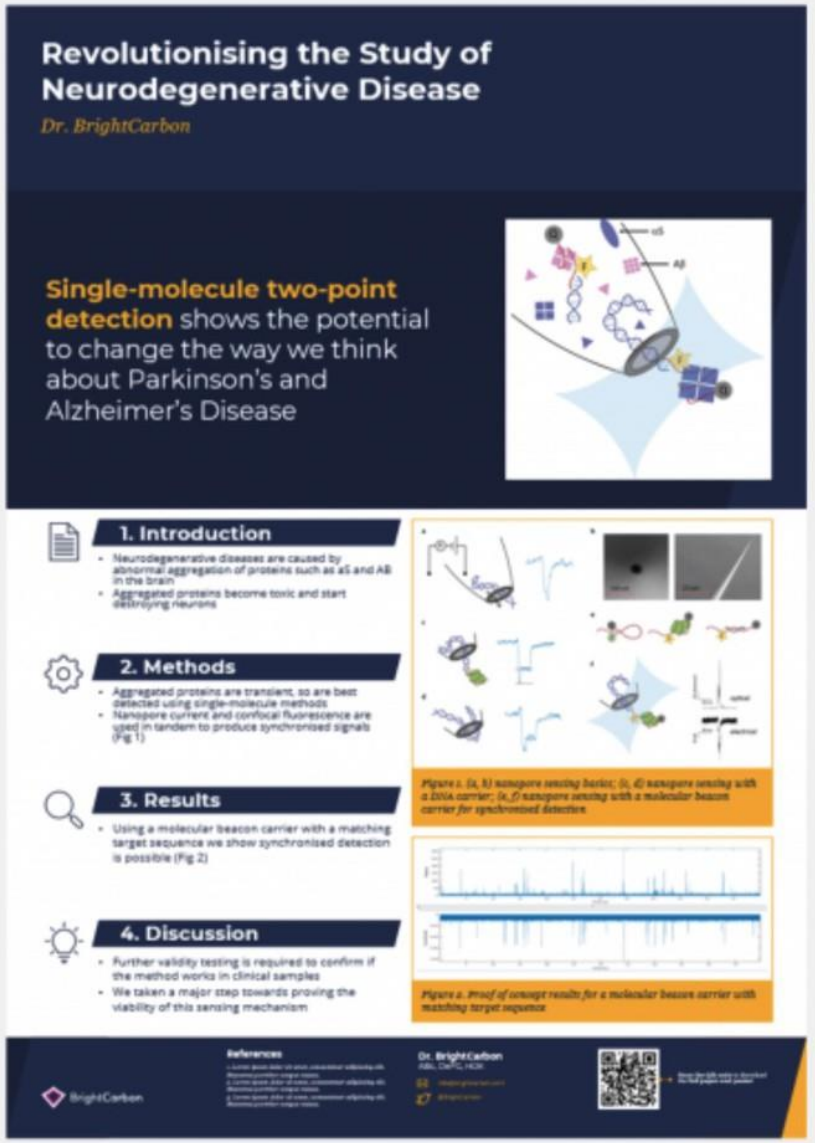
Dr BrightCarbon

Neurodegenerative Disease

Nanopore Sensing

Results

Conclusion



Revolutionising the Study of Neurodegenerative Disease

Dr. BrightCarbon

Single-molecule two-point detection shows the potential to change the way we think about Parkinson's and Alzheimer's Disease

1. Introduction

2. Methods

3. Results

4. Discussion

Enhanced antitumor efficacy of CAR T cell therapy
The best treatment in the world, trust me, this is the best

Á Morales-Molina[1], MA Rodríguez-Milla[1], Garcia-Rodriguez P[1], Hidalgo L[1], R Alemany[2] and J García-Castro[1]

Instituto de Salud Carlos III

In addition to inducing cytolytic effects, immunotherapies like oncolytic virotherapy can activate the immune response in patients, presenting a synergistic potential when combined with advanced therapies like CAR T cells. Here we have developed and validated a new human oncolytic adenovirus, named ISC301, that induces early activation of the pro-inflammatory pathways and enhances the antitumor effect of CAR T cell therapy. The new virus, based in the oncolytic adenovirus ICOVIR-5, incorporates different modifications in the RGD motifs.

Interestingly, the combination of NKG2D CAR T cells with ISC301 showed significant higher antitumor effect *in vitro* and *in vivo* than in combination with ICOVIR-5. In conclusion, the new oncolytic adenovirus ISC301 induces antitumor efficacy and enhances the antitumor effect of CAR T cell therapy. This improvement seems to be based on the intratumoral activation of the immune system.

RESULTS

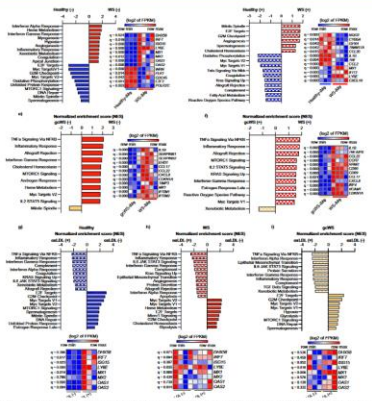


Fig 2. ***In vivo* antitumor efficacy of ISC301 is significant at day 3. a)** Immunocompetent C57BL/6 mice were s.c. inoculated with CMT64 tumors. When tumor volume was measurable, a single dose of $3x10^{10}$ viral particles of ISC301 or ICOVIR-5 was i.v. administered. At day 3 post-inoculation, tumor growth of ISC301 group was decreased compared to both the PBS and ICOVIR-5. At day 3 post-inoculation, tumor growth of ISC301 group was decreased compared to both the PBS and ICOVIR-5 groups. B) At end point, tumors treated with ISC301 showed inoculated with CMT64 tumors. When tumor volume was measurable, a single dose of $3x10^{10}$ viral particles of ISC301 or ICOVIR-5 was i.v. administered. At day 3 post-inoculation, tumor growth of ISC301 group was decreased compared to both the PBS and ICOVIR-5 groups. B) At end point, tumors treated

CAR T cells were administered one day after virus administration in order to take advantage of the induced pro-inflammatory immune response. Tumor growth showed as group and individuals.

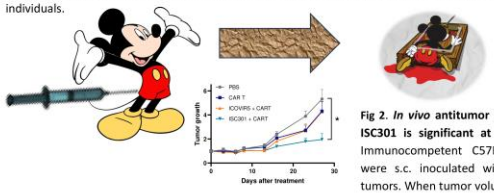


Fig 2. ***In vivo* antitumor efficacy of ISC301 is significant at day 3. a)** Immunocompetent C57BL/6 mice were s.c. inoculated with CMT64 tumors. When tumor volume was

Mi terapia es la mejor del mundo, hazte caso

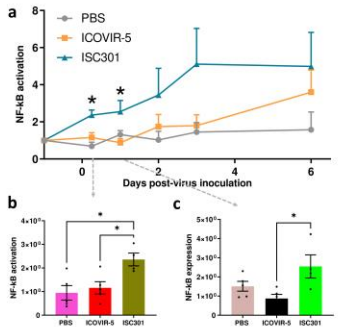
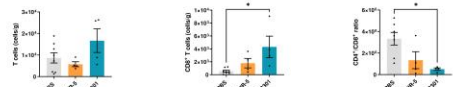


Fig 4. *In vivo* activation of NF-kB in the tumor. CMT64-NFkB-Luc tumor cells were inoculated in C57BL/6 mice, so *in vivo* activation of the NF-kB pathway is translated into luminescence. NF-kB activation was monitored during 6 days **(a)**.

Only 6 hours after virus administration **(b)**, tumors treated with ISC301 presented higher activation of NF-kB than those treated with PBS or ICOVIR-5. This tendency was also observed at 24 hours **(c)**.

Combination of NKG2D CAR T cells with ISC301 induces significant higher antitumor effect *in vivo* than in combination with ICOVIR-5



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CONCLUSIONS

- ISC301 and ICOVIR-5 induce a different panel of pro-inflammatory cytokines in blood two days after systemic administration.
- ISC301 induces an early activation of NF-kB in the tumors (6 and 24 h), not observed in tumors treated with ICOVIR-5 or PBS.

Título demasiado grande

Tipografía pasada de moda y de gusto

Elección de título

Contraste de colores

Combinación de colores

Figura de paper copiada y pegada

Inconsistencia en los gráficos

Espectacular uso de dibujitos

Gráficos no visibles

Más pie de figura que propia figura

Ah, sí, voy a poner alguna conclusión

Enhanced antitumor efficacy of CAR T cell therapy
The best treatment in the world, trust me, this is the best

Á Morales-Molina[1], MA Rodríguez-Milla[1], Garcia-Rodriguez P[1], Hidalgo L[1], R Alemany[2] and J García-Castro[1]

In addition to inducing cytolytic effects, immunotherapies like oncolytic virotherapy can activate the immune response in patients, presenting a synergistic potential when combined with advanced therapies like CAR T cells. Here we have developed and validated a new human oncolytic adenovirus, named ISC301, that induces early activation of the pro-inflammatory pathways and enhances the antitumor effect of CAR T cell therapy. The new virus, based in the oncolytic adenovirus ICOVIR-5, incorporates different modifications in the RGD motifs.

Interestingly, the combination of NKG2D CAR T cells with ISC301 showed significant higher antitumor effect *in vitro* and *in vivo* than in combination with ICOVIR-5. In conclusion, the new oncolytic adenovirus ISC301 induces antitumor efficacy and enhances the antitumor effect of CAR T cell therapy. This improvement seems to be based on the intratumoral activation of the immune system.

RESULTS

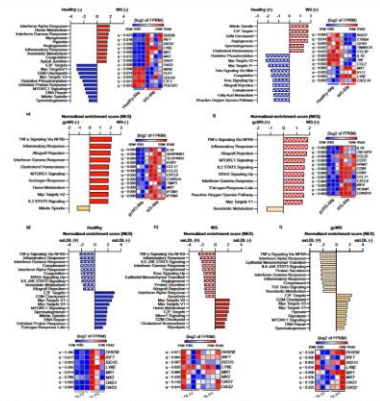
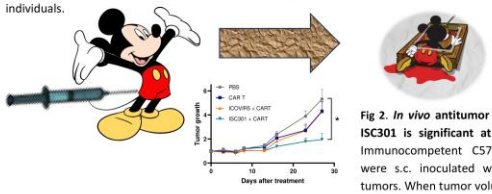


Fig 2. *In vivo* antitumor efficacy of ISC301 is significant at day 3. a) Immunocompetent C57BL/6 mice were s.c. inoculated with CMT64 tumors. When tumor volume was measurable, a single dose of $3x10^{10}$ viral particles of ISC301 or ICOVIR-5 was i.v. administered. At day 3 post-inoculation, tumor growth of ISC301 group was decreased compared to both the PBS and ICOVIR-5. At day 3 post-inoculation, tumor growth of ISC301 group was decreased compared to both the PBS and ICOVIR-5 groups. B) At end point, tumors treated with ISC301 showed inoculated with CMT64 tumors. When tumor volume was measurable, a single dose of $3x10^{10}$ viral particles of ISC301 or ICOVIR-5 was i.v. administered. At day 3 post-inoculation, tumor growth of ISC301 group was decreased compared to both the PBS and ICOVIR-5 groups. B) At end point, tumors treated

CAR T cells were administered one day after virus administration in order to take advantage of the induced pro-inflammatory immune response. Tumor growth showed as group and individuals.



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Mi terapia es la mejor del mundo, hazte caso

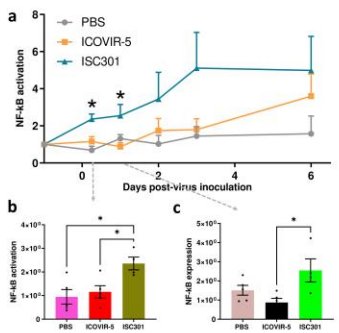

Fig 4. *In vivo* activation of NF-kB in the tumor. CMT64-NFkB-Luc tumor cells were inoculated in C57BL/6 mice, so *in vivo* activation of the NF-kB pathway is translated into luminescence. NF-kB activation was monitored during 6 days **(a)**.

Only 6 hours after virus administration **(b)**, tumors treated with ISC301 presented higher activation of NF-kB than those treated with PBS or ICOVIR-5. This tendency was also observed at 24 hours **(c)**.

Combination of NKG2D CAR T cells with ISC301 induces significant higher antitumor effect *in vivo* than in combination with ICOVIR-5

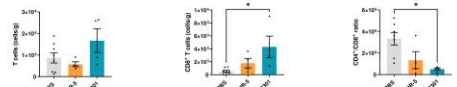

Fig 2. *In vivo* antitumor efficacy of ISC301 is significant at day 3. a) Immunocompetent C57BL/6 mice were s.c. inoculated with CMT64 tumors. When tumor volume was measurable, a single dose of $3x10^{10}$ viral particles of ISC301 or ICOVIR-5 was i.v. administered. At day 3 post-inoculation, tumor growth of ISC301 group was decreased compared to both the PBS and ICOVIR-5 groups. B) At end point, tumors treated with ISC301 showed increased density of general T cells and $CD8^+$ T cells. Moreover, their $CD4^+/CD8^+$ ratio is decreased. particles of ISC301 or ICOVIR-5 was i.v. administered. At day 3 post-inoculation, tumor growth of ISC301 group was decreased compared to both the PBS and ICOVIR-5 groups. B) At end point, tumors treated with ISC301 showed inoculated with CMT64 tumors. When tumor volume was measurable, a single dose of $3x10^{10}$ viral particles of ISC301 or ICOVIR-5 was i.v. administered. At day 3 post-inoculation, tumor growth of ISC301 group was decreased compared to both the PBS and ICOVIR-5 groups. B) At end point, tumors treated

CONCLUSIONS

- ISC301 and ICOVIR-5 induce a different panel of pro-inflammatory cytokines in blood two days after systemic administration.
- ISC301 induces an early activation of NF-kB in the tumors (6 and 24 h), not observed in tumors treated with ICOVIR-5 or PBS.

Enhanced antitumor efficacy of CAR T cell therapy by combination with a new oncolytic adenovirus, ISC301

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In addition to inducing cytolytic effects, immunotherapies like oncolytic virotherapy can activate the immune response in patients, presenting a synergistic potential when combined with advanced therapies like CAR T cells. Here we have developed and validated a new human oncolytic adenovirus, named ISC301, that induces early activation of the pro-inflammatory pathways and enhances the antitumor effect of CAR T cell therapy. The new virus, based in the oncolytic adenovirus ICOVIR-5, incorporates a deletion of the RGD motif located in penton bases.

Interestingly, the combination of NKG2D CAR T cells with ISC301 showed significant higher antitumor effect *in vitro* and *in vivo* than in combination with ICOVIR-5. In conclusion, the new oncolytic adenovirus ISC301 induces antitumor efficacy and enhances the antitumor effect of CAR T cell therapy. This improvement seems to be based on the intratumoral activation of the immune system.

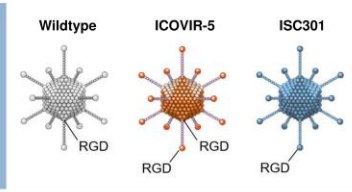

Fig 1. Wildtype **adenovirus presents RGD motifs in the penton base.** Oncolytic adenovirus ICOVIR-5 also includes an RGD motif in the H1-loop of the fiber knobs. The new ISC301 presents RGD motifs in the fiber as well, but not in the penton base.

RESULTS

ISC301 induces higher antitumor effect *in vivo* than ICOVIR-5 and increases tumor-infiltrating lymphocytes

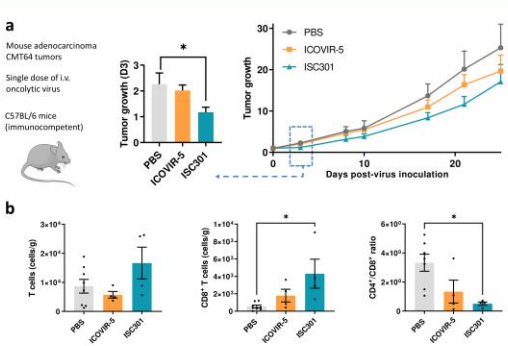

Fig 2. *In vivo* antitumor efficacy of ISC301 is significant at early days. (a) Immunocompetent C57BL/6 mice were s.c. inoculated with CMT64 tumors. When tumor volume was measurable, a single dose of $3x10^{10}$ viral particles of ISC301 or ICOVIR-5 was i.v. administered. At day 3 post-inoculation, tumor growth of ISC301 group was decreased compared to both the PBS and ICOVIR-5 groups. **(b)** At end point, tumors treated with ISC301 showed increased density of total T cells and $CD8^+$ T cells. Moreover, their $CD4^+/CD8^+$ ratio was decreased.

In vivo treatment with ISC301 and ICOVIR-5 present different profile of pro-inflammatory cytokines in peripheral blood

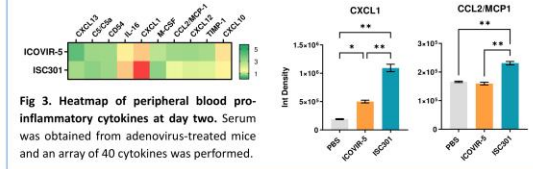

Fig 3. Heatmap of peripheral blood pro-inflammatory cytokines at day two. Serum was obtained from adenovirus-treated mice and an array of 40 cytokines was performed.

ISC301 induces *in vivo* an early NF-kB activation in the tumor

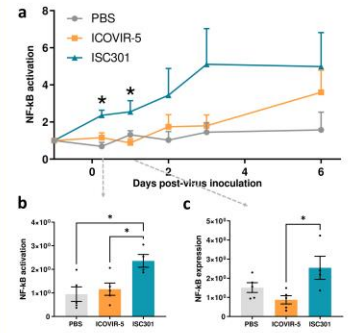

Fig 4. *In vivo* activation of NF-kB in the tumor. (a) CMT64-NFkB-Luciferase tumor cells were inoculated in C57BL/6 mice, so *in vivo* activation of the NF-kB pathway is detected by luminescence. NF-kB activation *in vivo* was monitored during 6 days.

(b) Only 6 hours after *in vivo* virus administration, tumors treated with ISC301 presented higher activation of NF-kB than those treated with PBS or ICOVIR-5. **(c)** This tendency was also observed at 24 hours.

In vivo combination of NKG2D CAR T cells with ISC301 induces significant higher antitumor effect than in combination with ICOVIR-5

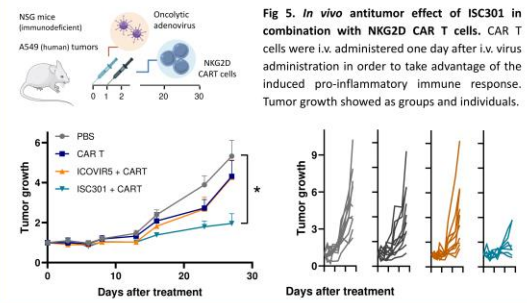

Fig 5. *In vivo* antitumor effect of ISC301 in combination with NKG2D CAR T cells. CAR T cells were i.v. administered one day after i.v. virus administration in order to take advantage of the induced pro-inflammatory immune response. Tumor growth showed as groups and individuals.

CONCLUSIONS

- The antitumor efficacy of ISC301 –whose RGD motifs in the penton base are deleted– is higher than the observed with ICOVIR-5.
- ISC301 and ICOVIR-5 induce different pro-inflammatory cytokines in peripheral blood two days after systemic administration.
- ISC301 induces an early activation of NF-kB in the tumors (6 and 24 h), compared with ICOVIR-5 or PBS.
- ISC301 enhances *in vivo* antitumor efficacy of NKG2D CAR T when administered in combination.

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COMUNICACIÓN CIENTÍFICA:

Comunicaciones orales y diseño de poster

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MUCHAS GRACIAS