



10: H. (2021; 2019), (2012).

D. (2011). (2017). (2011)

$CT = E_{N-1(x,y,z)} / E_{N(x,y,z)}$

$(x, y, z)$

$E_{N-1(x,y,z)}$

$CT \in [0, 1]$

I. (2015)

E.

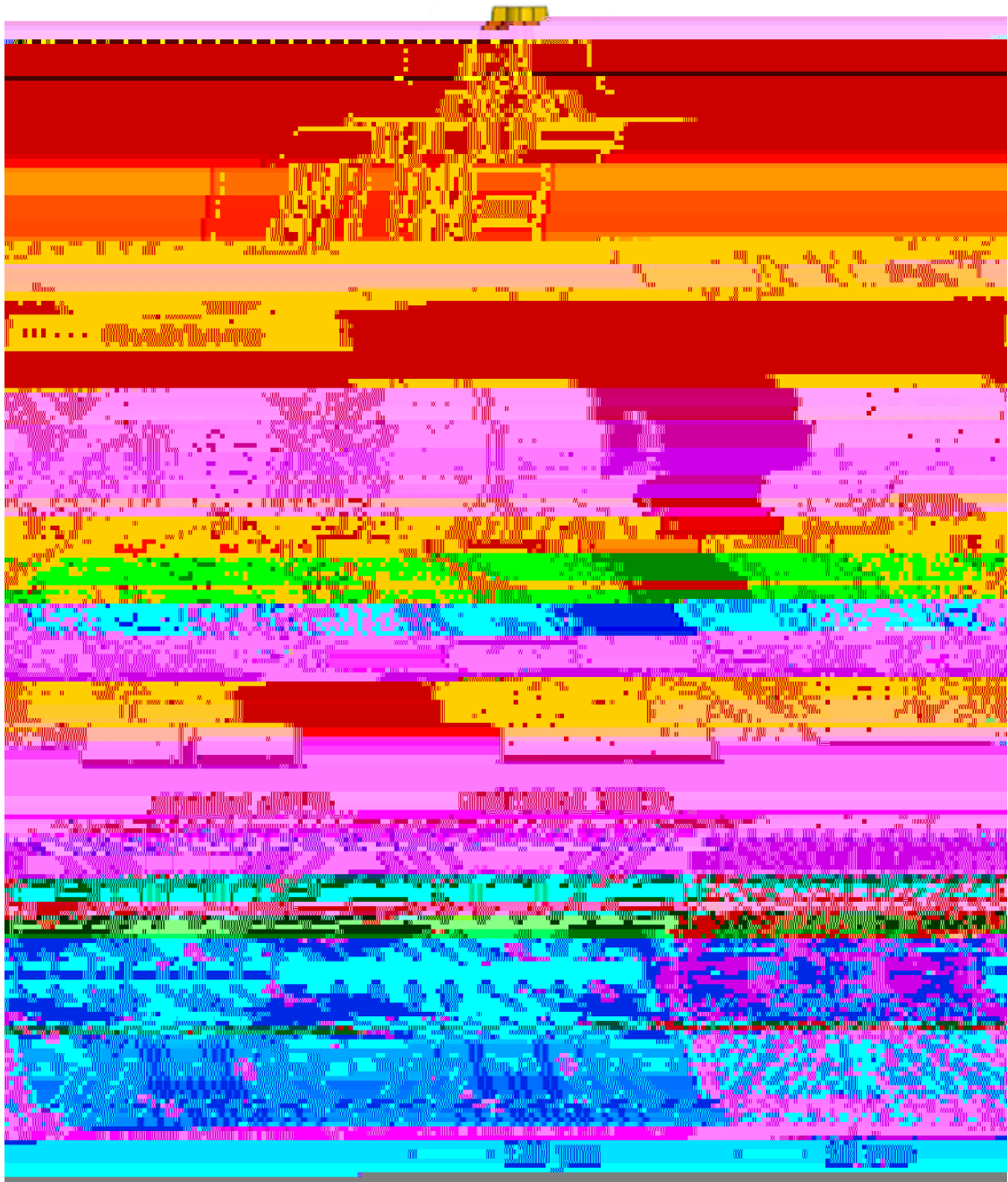


Figure E1

HEK 293-C 2 (EA) D 1 (EA) F<sub>0</sub> 1 ID F<sub>0</sub> 1

... (  $\sigma = 1.5 / \mu$  ), ...  
... ID# ...  
... EA (  $\sigma = 1.5 / \mu$  ) ...  
... via ...  
... ID# ... EA ...

...  $\sigma = 1.5 / \mu$  ) ...  
... in situ ...  
... EA (  $\sigma = 1.5 / \mu$  ) ...  
... ID# ... EA ...

## Results

### Simulations

... EA ...  
... (FE ) ... C ...  
... ID: C 014767), ...  
... A ...  
... (  $5 \mu$  ,  $1,000 \mu$  ), ...  
... (  $5 \mu$  ,  $1,000 \mu$  ) ...

The first part of the paper is devoted to the study of the asymptotic behavior of the function  $\Gamma(d)$  as  $d \rightarrow \infty$ . It is shown that  $\Gamma(d) \sim C d^{-1/2}$  as  $d \rightarrow \infty$ , where  $C$  is a constant. The second part of the paper is devoted to the study of the asymptotic behavior of the function  $\Gamma(d)$  as  $d \rightarrow 0$ . It is shown that  $\Gamma(d) \sim C d^{-1/2}$  as  $d \rightarrow 0$ , where  $C$  is a constant.

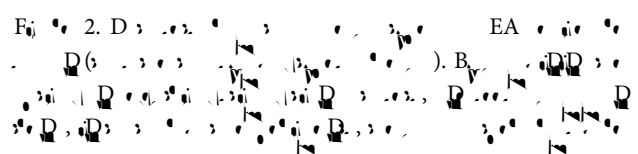
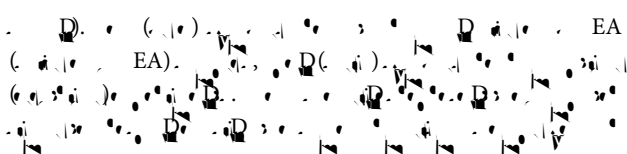
The first part of the paper is devoted to the study of the asymptotic behavior of the function  $\Gamma(d)$  as  $d \rightarrow \infty$ . It is shown that  $\Gamma(d) \sim C d^{-1/2}$  as  $d \rightarrow \infty$ , where  $C$  is a constant.

EA ( fl )  
F  
EA  
( )



**FIGURE E4**

Recording with bMEA and cMEA under optical excitation. Voltage response vs. time of optogenetically-transfected HEK-293 cells for the bMEA (upper) and cMEA (lower) devices in sensing regions at indicated distances  $d$  from backside-illuminated (0.5 s duration, shaded regions) stimulation location ( $d = 0$ ). Large extracellular potentials were evident at the site of stimulation and nearby electrodes in the bMEA but only at the site of stimulation on the cMEA. All windows correspond to 1.5 s recordings.



Handwritten musical notation for a piece in F major, 5/4 time. The notation is arranged in four staves. The first staff begins with a treble clef, a key signature of one flat (F major), and a 5/4 time signature. The music consists of eighth and sixteenth notes, with frequent rests. The second staff contains a measure with a fermata over a note. The third and fourth staves continue the melodic line with similar rhythmic complexity. The piece concludes with a double bar line and repeat signs.



Handwritten musical notation and lyrics, including the words "HD EA, C", "ff", and "J". The notation includes various musical symbols such as notes, rests, and dynamic markings.

EA. The ... C, ... 28. ... EA ... DC. ... (C F) ... EA ... DC ... (GΩ) ... C ...

0.6. ... 3D ...

(C F) ...

ID ... EA ... DC ... (GΩ) ... C ...

$c = 2\pi le \ln(r_{outer}/r_{inner})$ . ... 10%

A ...

... 100°C ...

HEK-293 cells. J...  
D, J, JC, D...  
D, D, KK, D...  
D, A...  
D, D, D...  
B, JC, D...  
C...  
(E...  
D@...).

## Funding

F D D... MH G D...  
H110907 D H109545; JC.

## Conflict of interest

D...  
D...  
D...  
D...

## Publisher's note

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.