

ANNUAL MEETING OF SHAREHOLDERS OF XENON PHARMACEUTICALS INC.

June 3, 2021

Please sign, date and mail your
proxy card in the envelope
provided as soon as possible.

PLEASE SIGN, DATE AND RETURN PROMPTLY IN THE ENCLOSED ENVELOPE. PLEASE MARK YOUR VOTE IN BLUE OR BLACK INK AS SHOWN HERE

MANAGEMENT RECOMMENDS VOTING "FOR" ALL OF THE FOLLOWING ITEMS.

- | | | | |
|--|--------------------------|--------------------------|--------------------------|
| 1. Election of Directors | FOR | | WITHHOLD |
| Simon Pimstone | <input type="checkbox"/> | | <input type="checkbox"/> |
| Mohammad Azab | <input type="checkbox"/> | | <input type="checkbox"/> |
| Steven Gannon | <input type="checkbox"/> | | <input type="checkbox"/> |
| Elizabeth Garofalo | <input type="checkbox"/> | | <input type="checkbox"/> |
| Michael Hayden | <input type="checkbox"/> | | <input type="checkbox"/> |
| Patrick Machado | <input type="checkbox"/> | | <input type="checkbox"/> |
| Ian Mortimer | <input type="checkbox"/> | | <input type="checkbox"/> |
| Gary Patou | <input type="checkbox"/> | | <input type="checkbox"/> |
| Dawn Svoronos | <input type="checkbox"/> | | <input type="checkbox"/> |
| 2. Compensation of Named Executive Officers | FOR | AGAINST | ABSTAIN |
| Approve, on an advisory basis, the compensation of the Corporation's named executive officers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Appointment of Auditor | FOR | WITHHOLD | |
| Appointment of KPMG LLP as Auditor | <input type="checkbox"/> | <input type="checkbox"/> | |
| 4. Remuneration of Auditor | FOR | AGAINST | ABSTAIN |
| Authorizing the Audit Committee of the board of directors of the Corporation to fix the remuneration to be paid to the Auditor | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

I/We authorize you to act in accordance with my/our instructions set out above. I/We hereby revoke any proxy previously given with respect to the Meeting. **If no voting instructions are indicated above, this Proxy will be voted FOR all of the foregoing items by any of the proxyholders appointed by management of the Corporation or, if you appoint another proxyholder, as that other proxyholder sees fit.** On any amendments or variations proposed or any new business properly submitted before the Meeting, I/we authorize you to vote as you see fit.

To change the address on your account, please check the box at right and indicate your new address in the address space above. Please note that changes to the registered name(s) on the account may not be submitted via this method.

Appointment of Proxyholder

I/We being holder(s) of Common Shares of Xenon Pharmaceuticals Inc. (the "Corporation"), hereby appoint Simon Pimstone, Chief Executive Officer of the Corporation or failing him, Ian Mortimer, President and Chief Financial Officer of the Corporation OR, instead of any of the foregoing

Print the name of the person you are appointing if this person is someone other than the individuals listed above as proxy of the undersigned, to attend, act and vote on behalf of the undersigned in accordance with the direction provided on all the foregoing matters and any other matter that may properly come before the Annual Meeting of Shareholders of the Corporation to be held at 11:30 a.m. PDT on June 3, 2021, to be held virtually via live webcast at <https://web.lumiagm.com/254509977>, and at any and all adjournments or postponements thereof in the same manner, to the same extent and with the same powers as if the undersigned were personally present, with full power of substitution.

Request for Financial Statements

In accordance with Canadian securities regulations, shareholders may elect to receive Interim Financial Statements and related MD&As, and may elect to not receive Annual Financial Statements and related MD&As.

Instead of receiving the financial statements by mail, you may choose to view these documents on SEDAR at www.sedar.com.

I am a shareholder of the Corporation, and as such request the following:

Annual Financial Statement with MD&A

(Mark this box if you would NOT like to receive the Annual Financial Statements and related MD&A)

Interim Financial Statement with MD&A

(Mark this box if you would like to receive the Interim Financial Statements and related MD&A)

If you are casting your vote online and wish to receive financial statements, please complete the online request for financial statements following your voting instructions.

If the cut-off time has passed, please fax this side to 718-765-8730.

Signature of Shareholder Date: Signature of Shareholder Date:

Note: Please sign exactly as your name or names appear on this Proxy. When shares are held jointly, each holder should sign. When signing as executor, administrator, attorney, trustee or guardian, please give full title as such. If the signer is a corporation, please sign full corporate name by duly authorized officer, giving full title as such. If signer is a partnership, please sign in partnership name by authorized person.