

ACELRX PHARMACEUTICALS, INC.
575 Chesapeake Drive
Redwood City, CA 94063
(650) 216-3500

February 4, 2011

VIA FACSIMILE AND EDGAR

Securities and Exchange Commission
Division of Corporation Finance
100 F Street, N.E.
Washington, DC 20549

Attn: Jeffrey P. Riedler
Christine Allen
Lisa Vanjoske
Dan Greenspan
Sebastian Gomez Abero

**Re: AcelRx Pharmaceuticals, Inc.
Registration Statement on Form S-1 (File No. 333-170594)**

Dear Mr. Riedler:

Pursuant to Rule 461 under the Securities Act of 1933, as amended, the undersigned registrant (the "Registrant") hereby requests that the Securities and Exchange Commission (the "Commission") take appropriate actions to cause the above-referenced Registration Statement No. 333-170594 (the "Registration Statement") to become effective on February 8, 2011, at 3:30 p.m., Eastern Time, or as soon thereafter as is practicable. This request for acceleration is subject, however, to your receiving a telephone call prior to such time from our legal counsel, Cooley LLP, confirming this request. The Registrant also hereby requests a copy of the written order verifying the effective date.

In connection with this request, the Registrant acknowledges that:

- should the Commission or the staff of the Commission (the "Staff"), acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the Staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the Registrant from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the Registrant may not assert Staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Until such time as it becomes effective, the above-referenced Registration Statement will continue to be subject to the delaying amendment set forth therein.

Very truly yours,

ACELRX PHARMACEUTICALS, INC.

/s/ Richard King

Richard King
President and Chief Executive Officer