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**INTRODUCTION:** ([Instructions](#Introduction))

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**PROTOCOL:** ([Instructions](#Protocol))

Enter text here (10-page maximum, 2.75 pages of highlighted text for filming).

**REPRESENTATIVE RESULTS:** ([Instructions](#Representative_Results))

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**FIGURE AND TABLE LEGENDS:** ([Instructions](#Figure_Legends))

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**DISCUSSION:** ([Instructions](#Discussion))

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**Required formatting**

* *File Type:* The manuscript must be submitted as an editable .doc or .docx file.
* *Font:* 12 pt, Calibri.
* *Line spacing:* Include single-line spaces between all paragraphs, headings, steps, *etc.*
* *Page margins:* 1 inch (2.54 cm) on all sides.
* *Page size:* Standard US Letter.

***Technical Language***

* The manuscript text must be **original, in complete sentences, and in paragraph form**.
* Define acronyms/abbreviations upon first use in the main text.
* Use SI abbreviations for all units: L, mL, µL, h, min, s, *etc.*
* Italicize all Latin words and nomenclature: *et al., in vivo, in vitro, in silico, i.e., e.g., etc.*
* Include a space between all numbers and the corresponding unit: 50 mg, 100 mL, 37 °C, *etc.*
* List all centrifugation speeds in terms of centrifugal g-force instead of rpm: 100 x g
* Molecular formulas should include subscripts: CO2, H2O2, O2, *etc.*
* Abbreviate species names after first use: *Caenorhabditis elegans* should be *C. elegans.*

**TITLE:** *(150 characters maximum)*

**The title should represent the content included in the video** and include the model system used or the type of study design. Please avoid the use of abbreviations.

**AUTHORS AND AFFILIATIONS:**

* Please provide full affiliations and institutional emails for all authors.
* Please see our Editorial Policies: ([www.jove.com/author/editorial-policies](http://www.jove.com/author/editorial-policies)) for more details regarding authorship.
* Affiliations should reflect where the work was performed. For multiple affiliations, use numerical superscripts.
* For equal contributions or other footnotes, indicate with an asterisk (\*).
* The published corresponding author may differ from the one used for correspondence with the editorial office during the submission and publication process.

Please use this example as a model:

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**KEYWORDS:** *(6 minimum, 12 maximum)*

**SUMMARY:** *(10-word minimum, 50-word maximum)*

The summary should clearly state the goal of the protocol. It may include a general description of the method and its applications. This description should focus on the protocol, not the results obtained by the method.

**ABSTRACT:** *(150-word minimum, 300-word maximum)*

The abstract should focus on the method being presented rather than the results of a specific experiment. Include a statement about the purpose of the method. A more detailed overview of the method and a summary of its advantages, limitations, and applications is appropriate. Please focus on the general types of results acquired. Do not include references here.

**INTRODUCTION:** *(150-word minimum, 1500-word maximum, 2-paragraph minimum)*

This section should include:

* A clear statement of the purpose of this method
* The rationale behind the development and/or use of this method
* The advantages over alternative methods with references to relevant studies
* The context of the method in the wider body of published literature
* Information to help readers decide whether the method described is appropriate for them

**PROTOCOL:** *(1-page minimum, 10-page maximum)*

**The protocol text should provide a detailed description to enable the accurate replication of the presented method (including setup, materials, actions, conditions, *etc.*) by both experts and researchers new to the field.** Well-established methods (*e.g.*, Western Blotting, PCR, *etc.*) used within the protocol should be cited as necessary and any modification of the aforementioned procedures should be described.

**A) Format:**

* The protocol must be a numbered list: step 1 followed by 1.1, followed by 1.1.1, *etc*.
* Include a space between each numbered step or note in the protocol.
* Each step should include 1-2 actions and contain 2-3 sentences. Use sub-steps as necessary.
* Please do not use indentations.
* Do not underline any text in the protocol; however, **bold** text is acceptable for emphasis.

**B) Grammar:**

* Use complete sentences throughout the protocol.
* Avoid the use of personal pronouns or colloquial phrases (*e.g.*, I, you, your, we, our).
* Use the active/imperative voice throughout this section.

Good Example: Add 30 µL of solution A to 30 µL of solution B.

Bad Example: 30 µL of solution A was added to 30 µL of solution B.

* Avoid the use of commercial language, including ™/®/© symbols or company brand names before/after an instrument or reagent. Cite these in the Table of Materials instead.

**C) Technical Specifications:**

* Use subheadings for clarity if there are discrete stages in the protocol.
* Please indicate any points at which the experiment can be paused and then restarted later. For these situations, indicate the choices at that point in the protocol.

Example: Incubate the filter for 4 h at room temperature or overnight at 4 °C.

* Indicate any toxic or harmful chemicals with the word “CAUTION” when they are first used, and include notes that describe the hazard and the appropriate handling guidelines.
* All methods that involve the use of human or animal subjects and/or tissue or field sampling must include an ethics statement before the numbered protocol section (see Editorial Policies: ([www.jove.com/author/editorial-policies](http://www.jove.com/author/editorial-policies)) for more information).

Example: All methods described here have been approved by the Institutional Animal Care and Use Committee (IACUC) of Harvard University.

D) Protocol Length:

There is a 10-page limit (with proper formatting) for the amount of text written in the protocol section. There is a 2.75-page limit on the amount of content we can film for a single video article.

* **For a Protocol section that exceeds 3 pages, highlight in yellow up to 2.75 pages (no less than 1 page) of protocol text (including headers and spacing) to be featured in the video. Our scriptwriters will derive the video script directly from the highlighted text.**
  + - Bear in mind the goal of the protocol, and highlight the critical steps to be filmed.
    - Please ensure that the highlighted steps form a cohesive narrative with a logical flow from one highlighted step to the next. The highlighted part of the step must include at least one action that is written in the imperative voice.
    - You do not need to delete steps from the protocol. The full-length manuscript will be published along with the video. All un-filmed steps will still be available in the written manuscript for readers.

**E) Equations**:(Example of JoVE video with equations: [www.jove.com/51288](http://www.jove.com/51288))

* Ensure all inline equations are formatted identically, using the consistent font style.
* Separate each equation to its own line, and define all terms in the equation. A 4-line equation should take up 4x the vertical space as a single line equation.
* Do not embed equations as images. Instead, use the equation builder in MS Word.

**F) Example Protocol:**

1. **Deactivation of Basic Alumina** 
   1. To generate basic alumina (activity IV), add 100 g of basic alumina (activity I) to a 500-mL round bottom flask.
      1. Add 10 mL of water to the flask and fit it with a glass stopper.
      2. Shake the flask vigorously until no lumps are visible, indicating even spreading of water throughout the alumina. Allow the alumina to cool to room temperature (RT).

CAUTION: Adsorption of water is exothermic, and the flask may get hot, which may result in a buildup of pressure. Release any pressure buildup frequently.

1. **Purification of the Iodoaziridine**
   1. Purify the crude iodoaziridine by column chromatography using basic alumina (activity IV) as the stationary phase, eluting with hexane and grading to 5% EtOAc/hexane7.

Note: High concentrations of EtOAc should not be used with basic alumina. In these cases, diethyl ether can be used instead.

* 1. Combine the product-containing fractions, and remove the solvent under reduced pressure to obtain the pure iodoaziridine.

Note: The protocol can be paused here.

**REPRESENTATIVE RESULTS:** *(Example Representative Results section:* [*www.jove.com/52010*](http://www.jove.com/52010)*)*

Please provide a concise, written description of a representative outcome following the use of this protocol, so that a viewer will have a sense of a “positive” and/or “negative” result. **Please reference all data and figures in the manuscript**, emphasizing how the results confirm the success of the protocol, and how to interpret the data. Please include data from successful experiments, and data from sub-optimal experiments to demonstrate the range of outcomes possible. Also include results for possible outcomes if critical steps are not followed. A diagram/schematic of the method is recommended but is NOT sufficient.

All claims of the effectiveness of a method must be supported with data, *i.e.*, representative results. For example: If authors claim that method X cleanly purifies nuclear envelope proteins from a cell, they must include a figure definitively demonstrating this purification. The manuscript must include at least one figure or table providing Representative Results.

Provide a separate file for each figure and table; do NOT embed figures or tables within the manuscript document. The default placement for all figures and results tables in the final publication is below the Representative Results text. Please indicate, via brackets [Place Figure 1 here], if you prefer figure/table placement at another location in the text.

**If a figure is adapted or republished from a previous publication, authors must cite the original article in the figure legend. Reprint permission for the previously published/adapted figure is required upon acceptance.**

Example: This figure has been modified from [citation].1

**FIGURES AND TABLES:**

* + Text: Use Calibri, 20 pt. font or greater.
* All figures should be provided as individual files. DO NOT embed them in the manuscript file.
* All microscopic images must include scale bars.
* All data figures must include measurement definitions and error bars (if applicable). Please define all error bars (SEM, SD, Range, *etc*.).
* Axis/Axis Tick Labels/Graph Lines: Use 20 pt. size font or greater, 3 pt. line weight or greater.
* A multi-panel figures (with parts A, B, C, *etc*.) should be submitted as a single, combined image file that contains all parts of the figure.
  + Preferred figure file types: .eps, .psd, .pdf. Please save any .ai files as a .pdf for submission but maintain .ai files for production purposes.
  + .tiff, and .jpg (not preferred) files must be at least 1,440 pixels x 480 pixels, or 300 dpi.
  + Preferred animated figure file types: .mov, .mp4, .m4v (upload as “Animated/Video Figure”).
  + 50 MB maximum size (Contact your editor or [submissions@jove.com](mailto:submissions@jove.com) for exceptions).
  + All tables should be provided as individual .xls or .xlsx files and submitted as Tables.

**TABLE OF MATERIALS:**

A Table of Materials is required for all articles. A template is provided [here](http://www.jove.com/files/templates/JoVE_Materials.xls). Please do not number the Table of Materials in the article. Please do not include any ™/®/© symbols here.

**FIGURE AND TABLE LEGENDS:**

Each figure or table, including supplemental figures/tables, must have an accompanying legend comprised of a short title and a short description of each panel or a general description. Legends should be included as part of the manuscript and not included in the figure file.

Example: **Figure 1:** **Representative flow cytometry analysis of non-permeabilized cells**. **A**. Schematic representation of gating strategy used in flow cytometry analysis sample. Data were analyzed after acquisition with the appropriate software… **B**.Semi-log graph for the….

**DISCUSSION:** *(3-6 paragraphs)*

JoVE is a methods-based journal. Thus, the Discussion section of the article should be focused on the protocol and not the representative results.

This section should discuss the following with citations:

* Critical steps in the protocol
* Modifications and troubleshooting of the method
* Limitations of the method
* The significance of the method with respect to existing/alternative methods
* Future applications or directions of the method

**ACKNOWLEDGMENTS:**

Please list acknowledgments and all funding sources for the work here. Also consider listing any person appearing in the film who does not appear in the authors list.

**DISCLOSURES:**

The corresponding author must ensure that all authors have disclosed any and all conflicts of interest. Examples of a conflict of interest would be “The author [full name] is an [employee/shareholder, *etc.*] of [full company name] that produces reagents and/or instruments used in this Article”. If authors have no conflict of interest, a statement stating this must be included. The default text is “The authors have nothing to disclose.”

**REFERENCES** *(10 minimum; if using EndNote, please use the* [*JoVE EndNote style file*](http://www.jove.com/files/JoVE.ens)*)*

In-Text Formatting:

* The corresponding reference numbers should appear as superscripts after the appropriate statement(s) in the text (before punctuation but after closed parenthesis). The references should be numbered in order of appearance.
* Multiple references should be separated by commas, or a dash for inclusive numbers: example2,5 refers to references 2 and 5, while example2-5 refers to references 2 through 5.
* Personal communications, unpublished data, and conference abstracts can be cited parenthetically in the text with author last name, initials, and year.
* Footnotes should not be used. Grant details and personal acknowledgments should not be cited as a numbered reference (but included in the Acknowledgments section).

*Citation Formatting:* (in order)

* Last name, first and middle initials (if available). List ALL authors. If there are six or more authors, list the first author and then “*et al.”*.
* Include article, book, or chapter titles. Titles of books should be italicized, whereas article and chapter titles should not.
* Article titles should start with capital letters and end with periods, and should appear exactly as they were published in the original work with no abbreviations or truncations.
* Write journal names in italics. The city or country where a journal is located can be included in parenthesis with the journal name. For books or other works, a publisher name, city, and country can be included.
* Write volume numbers in bold, followed by a space, issue number (in parentheses), a comma, and then a range of page numbers (start page – last page). A single page number or digital object identifier [doi] can be substituted for a range of page numbers.
* Provide the year published (in parentheses), followed by a period.
* “Accepted” or “In Press” can be listed after the title or journal name and before the year. Manuscripts that are in preparation or under review should not be listed.

*Citation Examples:*

Bedford, C.D., Harris, R.N., Howd, R.A., Goff, D.A., Koolpe, G.A. Quaternary salts of 2-[(hydroxyimino)methyl]imidazole. *Journal of Medicinal Chemistry*. **32** (2), 493-503 (1998).

Kioh, L.G. *et al.* *Physical Treatment in Psychiatry*. Blackwell Scientific Pubs. Boston (1988).