

Organizing Your Antibodies

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Tomorrow's groundbreaking discovery often depends on basic experiments with today's antibody. Antibodies are an indispensable reagent of the modern experimental laboratory, with research applications critical to numerous scientific disciplines, commercial uses, and fields of study. Long before a researcher is able to publish exciting new data and findings, he or she must perform a slew of basic, fundamental experiments, some of the most common of which are listed below:

- Western Blotting** – a common analytical technique used to detect the presence of a specific protein (or proteins) in a sample of tissue homogenate or extract. After sample preparation, electrophoresis and membrane transfer, the protein of interest is 'probed' for using a specific primary (and sometimes secondary) antibody and detected with several analytic methods. Diagnostic applications include detection of HIV, 'mad cow' disease (BSE), Lyme disease and Hepatitis B.

- Immunohistochemistry (IHC)** – a detection process for proteins in the cell through specific antibody-antigen binding. Samples are prepared, bound with either a direct antibody or a primary-secondary combination, and visualized by staining with common labels and dyes. The technique is most commonly used in surgical pathology, for typing and detection of tumors.

- ELISA Assay** – a biochemical enzyme immunoassay to detect the presence of an antibody or antigen in a sample. After immobilization on a solid support, a titration of specific antibody is applied over the surface for antigen binding, followed by detection with an enzyme substrate that infers presence with color change. The ELISA is a useful commercial tool for sensitive detection of various pathogens, and in the food industry for allergen detection.

- Immunoprecipitation/chromatin immunoprecipitation (IP/ChIP)** – a biochemistry technique involving the precipitation of a specific protein (or antigen) out of solution using an antibody that binds specifically to that protein (or protein complexes). ChIP involves the determination of DNA binding sites in DNA-binding proteins by DNA-protein complex immunoprecipitation followed by cross-linking and isolation of bound DNA.



•**Sandwich Assay** – a less common ELISA application, also used to detect antigen presence like the ELISA described above, with the main difference being the immobilization of the sample to a support matrix already linked to a specific capture antibody.

•**Flow cytometry**– a technique for sorting and analysis of microscopic particles, such as cells or chromosomes, by passing a stream of fluid through an electronic detection apparatus. Antibodies, coupled to fluorescent detection labels, are commonly used to probe for either specific antigens or distinctive target characteristics/features. Flow cytometry is most commonly used in diagnosing health disorders and purifying particular cells/particles of research interest.

•**Functional Modulation** – the use of antibodies in collective bioassays to detect *in vivo* posttranslational protein modifications, including phosphorylation, N- and C-terminus additions and deletions, glycosylation, [and others](#) in such a way that affects protein function.

In addition to proper laboratory technique, each of the aforementioned assays relies heavily on the specificity, accuracy and proper storage and handling of the often expensive monoclonal or polyclonal antibody stock. With such critical results at stake, [BioData Ltd.](#) ensures optimal antibody storage, experiment tracking and laboratory spending efficiency through organization and classification. The following white paper will introduce readers to BioData's modular, web-based laboratory research management system for principal investigators, lab managers and researchers and demonstrate how it can streamline and improve lab productivity.

Common Lab Frustrations:

Far too many researchers can sympathize with and easily recall some of these true lab horror stories:

- Opening the fridge or freezer to look for an antibody only to face a disorganized mess of unlabeled boxes
- Poring through mountains of mislabeled or unlabeled tubes, unable to pinpoint the antibody you really want to use
- Finally finding the right antibody, only to learn with dismay that it expired months ago
- Inheriting a project and reagents from a previous researcher that consists of blank tubes, no notebook or other inventory, and no protocols on how to replicate experiments
- Thinking you just ordered a new batch of antibodies only to find an empty tube on the day you're ready to use your experiment
- Going through two days of complicated immunohistochemistry or Western blotting only to look into an empty film or dark microscope field
- Facing an angry PI or lab manager that wants to know why laboratory funds are being misused to purchase so many expensive antibodies
- The list goes on and on....





Organize Your Antibodies

In an [interview](#) with the PostDocs Forum, cancer researcher Yael Gus-Brautbar reiterated many of these frustrations, especially in working with antibodies:

What are the most common problems you face in lab on a day-to-day basis?

We are in the problem-solving business, so problems are to be expected every day. Most common are technical problems that stem from bad reagents, for example, bad antibodies. Other problems come from just everyday work with other people such as stuff running out just when you need it, people using the equipment exactly when you want to, etc.

What do you think is the best way to prevent bad reagents and antibodies?

Avoid having shared reagents as much as possible -everyone should have their own aliquots. Try to label everything very clearly and keep an updated list of common as well as personal reagents.

If there was one single thing you could change about how you use antibodies, what would it be?

I think companies should start selling more HRP-conjugated primary antibodies for westerns. Having to use secondaries is getting old.

The above scenarios are not just frustrating. **They cut into lab productivity, unnecessarily lengthen postdocs and PhDs, reduce publications and prevent researchers from saving lives and advancing knowledge.** But it does not have to be so. The lab management team at [BioData](#) believes there is a simpler way to do research.

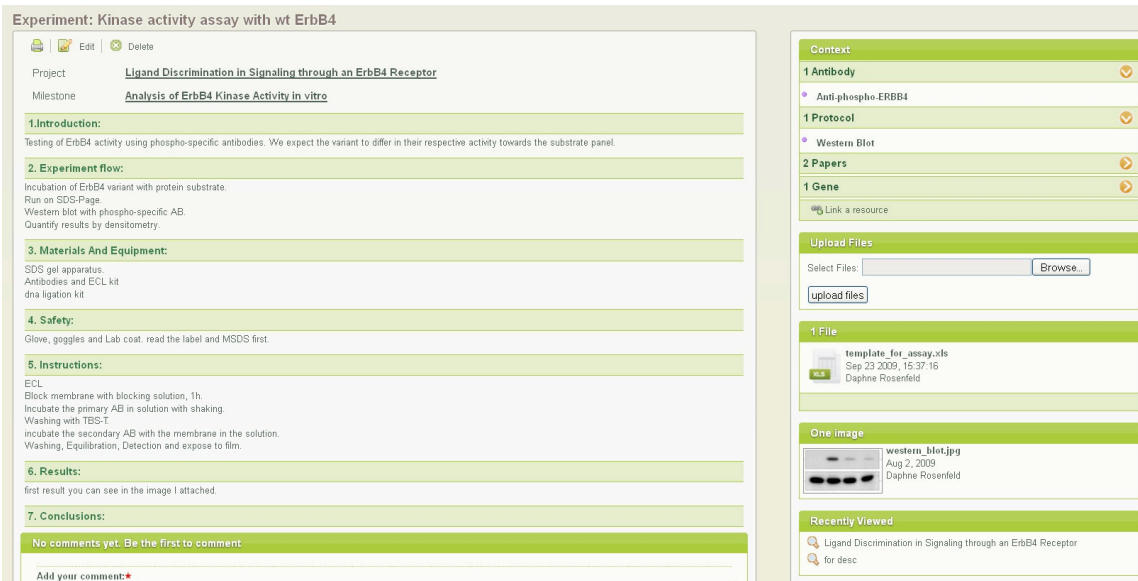
Benefits of Organizing Your Antibodies with BioData:

From interviewing scientists currently working with antibodies, to browsing popular research forums, to feedback from the many satisfied BioData users, the benefits of antibody organization are overwhelming:

•Archival of past data, antibody evaluations, experiments and standardizations

Organizing research output, including data, files, protocols, pictures, and other experiments, is one of the easiest ways to save time, track progress and prepare for future experiments. Upload any file, with corresponding images to save protocols so you know what Western Blotting or FACS experiment works best and with what antibody based on what you've *already done*. Projects can be divided into milestones (past, present and future) to help plan experiments with ease. Use the Project Reporting Tool to compile data, images and researcher comments into one PDF file. Print it out to help a labmate set up an experiment, to continue a project that has been handed off to you, to report results at a group meeting, or to quickly choose the right antibody and protocol for an assay with minimal troubleshooting.

Take a look at a sample experiment, with easy-to-access archived data at the ready for future experiment planning:



Experiment: Kinase activity assay with wt ErbB4

Project: [Ligand Discrimination in Signaling through an ErbB4 Receptor](#)

Milestone: [Analysis of ErbB4 Kinase Activity in vitro](#)

1. Introduction:
Testing of ErbB4 activity using phospho-specific antibodies. We expect the variant to differ in their respective activity towards the substrate panel.

2. Experiment flow:
Incubation of ErbB4 variant with protein substrate.
Run on SDS-Page.
Western blot with phospho-specific AB.
Quantify results by densitometry.

3. Materials And Equipment:
SDS gel apparatus
Antibodies and ECL kit
dna ligation kit

4. Safety:
Glove, goggles and Lab coat. read the label and MSDS first.

5. Instructions:
ECL
Block membrane with blocking solution, 1h.
Incubate the primary AB in solution with shaking.
Washing with TBS-T
incubate the secondary AB with the membrane in the solution.
Washing, Equilibration, Detection and expose to film.

6. Results:
first result you can see in the image I attached.

7. Conclusions:
No comments yet. Be the first to comment

Add your comment: *

Context

1 Antibody

- Anti-phospho-ERBB4

1 Protocol

- Western Blot

2 Papers

- 1 Gene

Link a resource

Upload Files

Select Files:

1 File

- template_for_assay.xls
Sep 23 2009, 15:37:16
Daphne Rosenfeld

One image

- western_blot.jpg
Aug 2, 2009
Daphne Rosenfeld

Recently Viewed

- Ligand Discrimination in Signaling through an ErbB4 Receptor
for desc

● Documenting labeling, aliquoting and storage of antibodies

Organization of supplies, equipment and reagents is one of the most critical elements of running an efficient scientific laboratory, particularly with the high rate of staff turnover, notably postdocs and graduate students. Most labs keep track of inventory either with an Excel spreadsheet, a group website or through individual documentation. Unfortunately, most of these methods lack a uniform classification system, ability for each member of the lab to access and update information, and/or ease of use that facilitates participation by **all** lab personnel. BioData's Molecular Collection tool optimizes all of these challenges.

All antibodies are given a unique ID, so they can never be mistaken for another lab member's stock. Furthermore, BioData helps save time by allowing you to import your list of antibodies from Excel, as well as attach any image or data file to each antibody. You can also link each antibody to an experiment they were used in.



BioData Organize Your Antibodies

The screenshot shows the BioData Antibodies interface. At the top, there are navigation tabs: Home, Projects, Specimen, Knowledgebase, Molecular, Materials, Storage, and Help. Below these are sub-tabs: Genes, Primers, Plasmids, Antibodies, and Sequences. The main content area is titled "Antibody: Anti-Type III Collagen (human, dog, rat, kangaroo)". It includes fields for Antigen / Immunogen, Clonality (Monoclonal), Description, Raised in (Mouse), Source, ELISA (1:800), and Created at (28 March 2011). A comment section is visible with the text "No comments yet. Be the first to comment" and a form to "Add your comment". Below the comment form, there are checkboxes for lab members: Daphne Rosenfeld, Megan Lewis, Daniel Moore, Michael Hill, Mike Johnson, and Julie Warner. On the right side, there is a "3 Tubes" section listing three antibody tubes, a "Context" section with "1 Protocol" and "1 Milestone", an "Upload Files" section with a "Browse..." button and an "upload files" button, and a "1 File" section showing a PDF file named "CSI_007-01.pdf" uploaded by Daniel Moore on May 18, 2012.

•Know exactly where antibodies are located, how much is left, and when they expire

Imagine never having to search through a crowded refrigerator or freezer for an antibody again. Now, you and your labmates can pinpoint a necessary antibody with the click of a mouse. With BioData's material organization module, whether you have 20 antibodies, or 20,000, you can easily define storage for each tube, down to the specific box it is kept in.

Aliquoting individual stocks for different lab members? Not a problem! BioData's allows individual team members to create a file specific to their own research, yet still accessible to the rest of the group.

Most importantly, lab managers and Principal investigators can stop wasting precious grant money on duplicate orders, because antibody stock quantity and quality is consistently up-to-date. And because each tube has a unique ID number, you will never use the wrong antibody again! Get your experiment right the first time out.



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Organize Your Antibodies

Box: Antibodies #1

Edit |
 PDF |
 Delete

Owner: **Megan Lewis**

Content Type: **Antibody Box**

Description: **Lab Stock - please put here only one aliquot from the Ab.**

Storage: **Room Lab Room → Freezer-Freezer 1 → Drawer-2**

[Click to reorder](#) [Click to duplicate](#)

	1	2	3	4	5	6	7	8	9	10
A	Pcadhe... 05.May.09	Anti-PT... 25.Feb.09	Bcl-3(A... 26.Mar.09	Anti GF... 02.Apr.09	ASIC-β... 19.May.09	Rat Alb... 20.May.09	good an... 04.Jun.09	Tyr-1(A... 10.Feb.10	Anti-PT... 23.Mar.11	casein... 14.Apr.11
B	casein... 14.Apr.11	CDC2L1... 14.Apr.11	HRP-1 (... 14.Apr.11	GHS-R1... 14.Apr.11	<div style="border: 1px solid black; background-color: #f0e68c; padding: 5px;"> GHS-R1 (D-16) (Antibody) Megan Lewis (14.Apr.11) </div>			ASIC-β... 14.Apr.11	PE Goat... 14.Oct.09	LRP6 IS... 01.Mar.08
C	Anti-Ty... 14.Apr.07		Rabbit... 14.Apr.11	LCSA/B... 14.Apr.11				Anti-Cc... 14.Apr.11	β2M1... 28.Apr.11	Anti-β2... 14.Apr.11
D	Bcl-3(A... 29.Mar.09	Bcl-3(A... 26.Mar.09	anti cy... 19.May.11	anti cy... 19.May.11	anti cy... 19.May.11			Human I... 14.Apr.11	Anti-Ty... 14.Apr.07	Anti-Ty... 14.Apr.07
E	Tyr-1... 10.Feb.10			Anti-JA... 14.Apr.11	Anti-Su... 14.Apr.09					
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In the long run, your lab will:

- Save time, money and efficiency
- Produce happier, more productive researchers and more prolific publication records
- Add YOUR tips here by [telling us](#) your lab's antibody organization success story

Why BioData?

There are other laboratory management modules and programs on the market, but BioData isn't just a smart choice for its ease of use and variety of organization tools. From the day you [sign up](#) for a FREE 30-day BioData cloud management system trial, you will receive the full support of our dedicated staff of programmers, scientists and troubleshooters. What does this mean? We will help you set up your lab inventory and archives. We will show you tricks and other ways you can utilize BioData to maximize lab efficiency and antibody organization. We will follow up with you individually to make sure you continue to be satisfied with our program and are saving time and money.



Organize Your Antibodies

Lab Researchers

BioData will help you [meet your research goals](#). This includes simple solutions, like knowing where your antibody is, how much you have left, what its expiration date is, and being able to access previous results and archives to plan experiments.

Laboratory Managers

BioData will help you [track your lab's supplies and costs](#). This means no more needless duplicate ordering, penny pinching, and reprimanding your graduate students and postdocs on spending. Everything is organized in an easy-to-use digital module.

Principal Investigators

BioData will help you [track research progress and lab coordination](#) more effectively. Track Western blot data and antibody efficiency through archives, help new graduate students plan their experiments and help keep the group on track to maintain proper inventories of antibodies, down to the *individual freezer box*!

Whether you're a small lab in a private research university using antibodies to do cancer research, or an enormous government lab using antibodies to ensure the safety of our food supply, BioData has a flexible plan for you. We have different price plans, ranging from small to max, that scale according to size of lab, number of projects that need to be managed, and volume of data that the project necessitates storing.

The investment you make with BioData in one month to organize your antibodies amounts to the cost of *one lost or expired tube* of a rare monoclonal antibody. The choice is unmistakable, the results immediate—[sign up today](#) for a FREE 30-day trial to start streamlining your research!

Ben Gurion University graduate student and BioData community liaison Chen Guttman [blogged](#) about how he made the most of his antibodies by using the [BioData](#) system:

"With memories of my former [disorganized] lab in mind, I decided to map the location and specification of all our antibodies in my current lab. To do so, I logged into my laboratory account at BioKM and started to list them one by one. I was happy to see many important fields where I was able to list all the information about each antibody such as its origin (Rat, Mouse, Sheep and many others), type of clone (polyclonal or monoclonal), its source, and the recommended dilution (very important!). There is even a description field that enabled me to add remarks in regard to each specific antibody. BioKM's option to link the antibody to a certain project and to a specific location is well embraced and will definitely aid me in improving my research management capabilities and improving my efficiency at the bench."

Effective. Easy. Empowering... Sign Up TODAY!

The benefits and cost savings of organizing your laboratory's antibodies are clear: less money spent, less wasteful, repetitive experimenting quicker results, all leading to more publications. The flexible [knowledge management system](#) is tailored to individual lab personnel, offers [scalable pricing plans](#) according to desired storage space and number of group projects, and is the ONLY data management system that offers staff support to



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Organize Your Antibodies

help you maximize its value. And now, BioData even [supports the iPad!](#) Antibody organization and management has truly never been easier.

So what are you waiting for?

Empower your lab and sign up for a **FREE 30-day trial** [right now](#) with BioData and receive instant feedback and support from our technical staff.

Sign up for BioData's [next introductory webinar](#), and follow BioData on [Twitter](#) and [Facebook](#) to get more helpful tips for laboratory organization and information on their revolutionary new cloud management system.