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Considerations for Next-Gen Sequence Assembly and Analysis Software Selection

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With numerous products on the market, how can you determine the most suitable next-gen assembly and analysis software for you? Here are five basic considerations for choosing software that truly fits your needs.

Rule #1—Select software that will work with your data and your computer

Before you undertake your software search, identify your needs so you aren't unduly swayed by sales or marketing pitches of software providers.

Make sure that any next-gen software you are considering can handle data from the sequencing platform(s) you use and that it supports the workflows or experiment types you will be doing (e.g. targeted resequencing, SNP detection, long reads and long inserts, de novo assembly of large eukaryotes, metagenomics, cancer genomics, etc.). In addition, check the technical requirements to verify whether the software is compatible with your computer's operating system, RAM and hard drive capabilities.

Obviously, the best way to see if the software works with your data type and computer configuration is to try before you buy. Request a free trial of any software, then ask the provider to specifically show you how to use it with your own data.

Rule #2—Consider the reputation of the software provider

Look for established companies with consistent histories of creating strong solutions in the next-gen market. Remember that the data you're generating two years from now may be different from today's data. Only consider software from providers that update their software frequently enough to keep pace with new technology.

Next, research these companies by talking to colleagues and checking websites like SEQanswers and NGS Leaders. Search websites such as PubMed for journal articles that cite the software. Contact the software provider to ask for references from people in your field who are already using the software. A reputable company should also be able to provide a list of articles referencing the software, as well as links to objective (third-party) software reviews.

Rule #3—Choose software that offers an intuitive user experience and resources for learning the software

Ideally, software should be both easy to learn and easy to use over the long-term.

Contact the provider to see if training resources are available to fit the learning style of the person who will be using the software:

- Visual learners will appreciate written or video tutorials, webinars, and written user's manuals;
- Auditory learners will want video tutorials or webinars;
- Kinesthetic learners will benefit most from free trial software that can be used with their own data.

If a graphical user interface (GUI) is important to you, make sure the software you are considering has one. People with strong computer backgrounds, such as bioinformaticians, may be just as happy working with scripts and command line windows.

Whether the software has a GUI or operates via command line, it is important that it have a detailed user's manual. Wherever possible, this should be contained within the tool, itself, via contextual online help.

Rule #4—The service you get is just as important as the product

Purchasing software is just the beginning of your relationship with the provider. You may need advice about everything from installation to real-life applications. A software provider will be your partner long after you've made a purchase, so choose well. Before signing a purchase agreement, make sure you know what service and support is provided, and for how long it will be available.

Call the provider's Customer Support number. Does a live person answer the phone? If you are using a free trial of the software, ask Customer Support to answer any questions you have about it. Do they give clear information and treat you as a valued customer? The availability of a live "help desk" is one of the best reasons to buy software rather than rely on unsupported freeware.

Rule #5—Make sure to consider all costs when budgeting for software

All software comes with a "cost," even if the software itself is free.

Commercial next-gen assembly and analysis software may have both an up-front cost and a continuing cost, such as an annual licensing or maintenance fee. Is the license perpetual or annual? What is included in annual support – updates, upgrades, technical support? Make sure you understand the total lifetime product cost before you commit to buying any software. If you'll be using the application with multiple workstations, a concurrent use network or site license may be more economical than many individual licensed copies.

It may be tempting to choose freeware instead of a commercial product. However, while freeware certainly rates high on the initial "affordability" scale, it may disappoint in most other areas, including innovation, accuracy, intuitive user interface, and availability of help, including live customer support, user's manuals and written or video tutorials.

Don't forget that there is an "employee time cost" involved in installing, learning and using any software. An up-front cost savings on software can be quickly cancelled out if an employee wastes time each week dealing with an unwieldy GUI or making wrong assumptions or calculation errors due to a lack of good documentation and customer support.

In addition to the software cost, some next-gen assembly and analysis software may require you to up-grade your computers or purchase new ones to handle the large volumes of data generated by next-gen sequencing instruments. Be sure you count these costs when determining the economic feasibility of a particular software purchase.

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When it comes to choosing next-gen assembly and analysis software, making the right investment will pay for itself many times over. To make the most informed decision, be sure to thoroughly identify your needs and then evaluate all relevant considerations before making the purchase.