

**The Yale Pathology/ Yale Cancer Center  
Tissue Microarray Facility**  
([www.tissuearray.org](http://www.tissuearray.org))

**Director: David L. Rimm, M.D.-Ph.D.**

***Mission Statement:***

The mission of this division is to provide high quality tissue microarrays to Yale and other users:

- To maximize the value of the resources in the Yale Pathology Tissue Archive.
- To provide a cost effective method to assess multiple tissue samples

***TMA construction policy:***

**Construction Pathways and Ordering:**

There are two pathways for array construction.

**Pathway A arrays:** If a user anticipates that they will need a large number of sections or a high proportion of an array, or if a user would like to maintain control over the distribution of the array, then they must commission it and pay for it at the rates shown above under “TMA construction pricing”. They may then stipulate the map of the array and purchase the entire block or as many sections as they would like at \$20 per section. If other users wish to purchase sections from this array, the commissioning investigator will be sought and they will have the rights to order more sections, prior to filling the order of the other requesting user. In the case of commercial users commissioning slides, one third of the array is reserved for Yale or Academic users, so they may only obtain and control an average maximum of 90 slides from each block. Blocks containing Yale Tissue are maintained by the TMA facility.

**Pathway B arrays:** If a user only anticipates needing a few slides from an array, they may not desire or be fiscally able to commission array. In this case, the array may be produced by the facility and the user may purchase slides at the price shown above for blocks in inventory. No investigator will have the privileges associated with array construction and the Path B requesting user will not be notified if other users want to purchase slides from this type of array. The “per slide” charge is fixed strictly as a function of the number of spots on the array (there is no volume discount). Path B arrays will only be constructed if the facility judges that it will be able to recoup construction cost by provision of slides to multiple users. This policy allows unfunded investigators equal access to the resources

produced by the facility. Blocks containing Yale Tissue are maintained by the TMA facility.

**Quality Control:**

The current practice of the facility is to use every 10<sup>th</sup> slide for quality control purposes. This slide is H&E stained and reviewed by a pathologist to determine the number of valid cores. This data is maintained with the array distribution data. When the percentage of valid cores dips below 75%, then slides will no longer be routinely distributed (this generally occurs between cuts 70 and 100). If slides are received by users that are of poor quality (>25% spots missing) or affected by another anomaly, the slide will be replaced, at no charge, by the facility. The judgment of quality will be at the discretion of the staff of the facility.

In the case of large arrays, these “high cut number” slides may still be useful and have value albeit less than the original cohort. Thus these are still available at the same fee structure defined above and generally will not be used as test arrays or discarded until the level of valid cores dips below 50%. These “high cut number” slides are distributed “as is” with no opportunity for replacement due to poor quality. They may also be purchased at the “per spot” fee, on the basis of the number of spots on the nearest QC slide.

**Construction Priority:**

Arrays will be constructed on a first come, first serve basis. A priority date is obtained by completion of a valid TMA construction order form and filing with the Technical Director of the facility. The turn-around time for arrays will thus be determined by work load and staffing.

Arrays made for a specific investigator are not exclusively the property of that investigator and may be distributed to other users. However, attempts will be made to notify the initiating investigator when sections are requested from the block they commissioned. The other user will be encouraged to contact and collaborate with the commissioning investigator. The other user will be required to pay full construction fees if the original user exhausts the array. Otherwise the other user will pay for the array at the rates above for facility inventory.

**Inventory of Blocks:**

The facility draws Yale Pathology blocks from the Pathology archives for use in arrays. Once a block is removed from the archive and selected for use in an array, it is labeled with an RFID (radio frequency identification) tag. These tags facilitate accurate archiving of blocks used in arrays. While these blocks are not returned to the Pathology Department Archives, they are easily retrievable by database search. They are maintained in array numbered boxes within the facility (LH202). The presence of an RFID tag allows better control of tissue identification and facilitates map construction. Blocks used for construction from other sources will not be RFID tagged (without special request). These blocks will be cored and returned to their source within a time scale agreed upon at the time of array design and ordering.

**Annotation and Maps:**

Each array is distributed with an array map that is downloadable by facility staff from Cruella. Cruella is a web-based interface for maps and data associated with TMAs. Yale users may obtain password-protected direct access to Cruella through the TMA staff. However, they are not required to do so. If desired, they will receive an electronic map with standard annotation in a flat text file with each array distribution event. Annotations of arrays, beyond that available from the facility, may be available from other investigators either by collaboration or by license.

**Test Arrays:**

Test arrays may be commissioned for specific projects if tissues of interest are not currently available. Investigators may choose the content (organ site, tumor type) of the array, but not the case numbers. If the investigator wants specific cases or a specific map, then it is no longer a “test” array and it will be billed by the standard charges for tissue access and array construction shown above. A test array may be specifically designed by the facility as a standard test array (25 cases with 5 normal tissue cores), or they may be high cuts from arrays that are considered “exhausted” in that there are less than 75% of the original cores present, and would otherwise be discarded. Test arrays are distributed at the discretion of the TMA facility staff to maximize use of the Yale Pathology tissue archives.

**Cell line controls in TMAs:**

Often times it is valuable to include cell lines or purified protein controls in TMAs. Investigators may provide their own cell line or protein blocks for inclusion. A protocol for preparation of cell line blocks can be downloaded from the facility web site. Inclusion of cell line cores is billed at the standard array rate, but there is no tissue access charge. Some standard cell lines may be available from the TMA facility, produced by the TMA facility. These may be ordered through the facility, but are billed using the “tissue access” fee, as well as the arraying charge.