

Topics and Techniques for Forensic DNA Analysis
Continuing Education Seminar

Organizational Methods and Skills

NYC OCME
Dept of Forensic
Biology

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Time Management

- I ran out of time so I didn't have time to prepare this presentation...



Thoughts on Time Management

- We all have the same amount of time
- What we get done is based on our focus and our priorities
- Regularly creating "To Do" lists can be helpful
- I usually look at three months at a time to get the "Big Picture" of my schedule
 - I use a Palm Pilot to keep track of daily activities

Thoughts on Organizational Methods

- Workspace
 - File things in a way that works for you so you can find the information again in the future
- Team Coordination/Communication
 - Meet only as much as needed
 - Build relationships with team members
- Effort, Focus, and Priorities
 - Always give your best
 - Set goals and work hard to achieve them

Storage Bin Approach for Collecting Information on Various Topics



Sometimes I Have "Pile Files"...



Team Coordination/Communication

- Team meetings versus individual interactions
 - Some information is best shared with everyone
- Email versus phone or direct conversations
 - Consider which is most efficient or necessary
- Following an agenda for team meetings improves productivity
 - Write primary plans on a white board at the start

Communication Improves with Practice

- Spoken
 - I entered every speaking contest in high school and took a public speaking class in college
- Written
 - Practice as much as possible
 - I am always writing in an effort to improve my ability to teach different topics
 - Find someone whose opinion you value to correct your work
 - My wife reviews and edits my book chapters

Preparing PowerPoint Files

- Practice trying to convey concepts to others
 - I started a lunch time speaking series at GeneTrace so I could practice making slides and learn how to better present information to others
- I give away my slides as I am trying to help others and raise the bar for them
 - Plus it motivates me to keep moving to stay out in front

Always Consider Your Audience

- I always make new slides with each talk I give
- This practice helps keep me fresh to the subject and helps me learn something new with each talk I give so that I don't get bored
 - CAUTION: this requires a lot of work!
- Always finish speaking on time
 - respect your audience and other speaker's time

Effort and Focus:

The Story of a Few Melons

- Two men formed a partnership. They built a small shed beside a busy road. They obtained a truck and drove it to a farmer's field, where they purchased a truckload of melons for a dollar a melon. They drove the loaded truck to their shed by the road, where they sold their melons for a dollar a melon. They drove back to the farmer's field and bought another truckload of melons for a dollar a melon. Transporting them to the roadside, they again sold them for a dollar a melon.

Story shared by Dallin Oaks in his "Focus and Priorities" talk, April 2001, available on www.lids.org

Effort and Focus:

The Story of a Few Melons (cont.)

- As they drove back towards the farmer's field to get another load, one partner said to the other, **"We're not making much money on this business, are we?"**
- "No, we're not," his partner replied. **"Do you think we need a bigger truck?"**

Are we hauling information back and forth without realizing that we cannot make a profit from our efforts until we understand the true value of what we already have?

Story shared by Dallin Oaks in his "Focus and Priorities" talk, April 2001, available on www.lids.org

General Thoughts on Leadership

- Communication is key
 - Meetings are not always the best way to communicate
- Learn to delegate well and follow up appropriately
- Find a way to stay motivated and motivate others
 - “Be up and doing...”
 - Read and ponder the message of inspiring quotes and biographies of great people

Some Example Quotes

that are meaningful to me

The reason why most men do not achieve more is because they do not attempt more.

– Source unknown

Whether you think you can or whether you think you can't, you're right!

– Henry Ford

The secret of life is not to do what you like, but to **like what you do.**

– Source unknown

The reward of a thing well done is to have done it.

– Ralph Waldo Emerson

If you do the little jobs well, the big ones will tend to take care of themselves.

– Dale Carnegie

You spend about one half of your waking hours at your work, and if you don't find happiness in your work, you may never find it anywhere.

– Dale Carnegie

Every job is a self-portrait of the person who did it. Autograph your work with excellence.

– Source unknown

Genius is one percent inspiration and ninety-nine percent perspiration.

– Thomas A. Edison

For the man who wins is the man who works,
Who neither labor nor trouble shirks,
Who uses his hands, his head, his eyes;
The man who wins is the man who tries.

– Source unknown

It is high time that the ideal of success should be replaced by the ideal of service.

– Albert Einstein

The very first step toward success in any occupation is to become interested in it.

– Sir William Osler

The men who try to do something and fail are infinitely better than those who try to do nothing and succeed.

– Lloyd Jones

Let our advance worrying become advance thinking and planning.

– Winston Churchill

When a thing is done, it's done. Don't look back. Look forward to your next objective.

– General George C. Marshall

The world stands aside to let anyone pass who knows where he is going.

– David Starr Jordan

Dans les champs de l'observation le hasard ne favorise que les esprits préparés
(Inaugural lecture, University of Lille, December 7, 1854)

Louis Pasteur
(1822-1895)



In the fields of observation **chance favors only the prepared mind.**

Thomas Alva Edison (1847-1931)

- There is no substitute for hard work.
- *I am grateful to my parents for teaching me the value of hard work and the importance of self-education.*

Mark Twain (1835-1910)

- Always do right. This will gratify some people, and astonish the rest...

President Calvin Coolidge

- **Nothing in the world can take the place of persistence.** Talent will not; nothing is more common than unsuccessful men with talent. Genius will not; unrewarded genius is almost a proverb. Education will not; the world is full of educated derelicts. Persistence and determination alone are omnipotent. The slogan "Press on" has solved and always will solve the problems of the human race.

Alexander Hamilton

- Men give me some credit for genius, but all of the genius I have lies in this. **When I have a subject in mind, I study it profoundly,** day and night it is before me. I explore it in all its bearings. My mind becomes pervaded with it. **The result is what some people call the fruits of genius, whereas it is in reality the fruits of study and labor.**

– (as quoted in Sterling W. Sill, *The Upward Reach*, p. 125)

Some Thoughts...

- Learn everything you can while in school – and then go out into the world and change it for the better
 - BYU's motto: "enter to learn, **go forth** to serve"
- Importance of self-education (continuing education) – READ, READ, READ! ... I have never had a single class on molecular biology!
- Importance of skills in oral and written communication

Lessons Learned Over the Years

- Enjoy reading from a young age
 - Example of my parents, we always had books around
- Experience at National Archives
 - Importance of collecting and storing information so that it can be retrieved efficiently
- PhD dissertation
 - Gathering information on CE conditions
 - Collecting every paper possible on a subject
- GeneTrace
 - If you want to become an expert in something, you put in more time than anyone else in that area (data analysis)

Are you willing to pay the price in terms of time and effort?

Collection of CE Conditions Used for DNA Analysis in My Ph.D. Dissertation

Reference	Sample	Conditions: Capillary, Buffer, Additives, Voltage	Detection	Speed	Resolution
[131]	9713, 9794, A 9807 (skin swabs) 980722 (hair)	P/ACE 2050 CE, FluoroS 500 µm i.d. DB-17 (0.1µm), 25 °C 100mM Tris-borate, 0.1mM EDTA pH 8.7 w/CsOH, 1% HEC (Aldrich), 50 ng/mL YO-PRO-1, 1.27 µM EB, EK: 10s @ 5kV; CC: 38 µA (13kV)	LIF 488-520	15 min 30 min	10000 10000 (10000)
[134]	gH174 (hair)	WatersB-CX, 50µm(50) x 100 µm i.d. Bond silica, 30 °C 100mM Tris-borate, 0.1mM EDTA, 0.1% w/v C ₁₂ H ₂₅ NH ₂ (Aldrich), 50 ng/mL YO-PRO-1, 1.27 µM EB, EK: 10s @ 5kV; CC: 38 µA (13kV)	UV	15 min 20 min	10000 10000
[135]	gH174 (hair), no 45174 (hair), no 30 to P/CE gradient	WatersB-CX, 50µm(50) x 100 µm i.d. Bond silica, 30 °C 100mM Tris-borate, 0.1mM EDTA, 0.1% w/v C ₁₂ H ₂₅ NH ₂ (Aldrich), 50 ng/mL YO-PRO-1, 1.27 µM EB, EK: 10s @ 5kV; CC: 38 µA (13kV)	UV	15 min 20 min	10000 10000
[136]	Electro & Swain	WatersB-CX, 50µm(50) x 100 µm i.d. Bond silica, 30 °C 100mM Tris-borate, 0.1mM EDTA, 0.1% w/v C ₁₂ H ₂₅ NH ₂ (Aldrich), 50 ng/mL YO-PRO-1, 1.27 µM EB, EK: 10s @ 5kV; CC: 38 µA (13kV)	UV	15 min 20 min	10000 10000
[137]	9713, 9794, 9807, 9807, 9300 9807 (hair)	P/ACE 2050 CE, FluoroS 500 µm i.d. DB-17 (0.1µm), 25 °C 100mM Tris-borate, 0.1mM EDTA, 0.1% w/v C ₁₂ H ₂₅ NH ₂ (Aldrich), 50 ng/mL YO-PRO-1, 1.27 µM EB, EK: 10s @ 5kV; CC: 38 µA (13kV)	LIF 488-520	15 min 30 min	10000 10000 (10000)
[139]	45174 (hair) Swain	WatersB-CX, 50µm(50) x 100 µm i.d. Bond silica coated with PAA, PAA 20 mM Na-phosphate, pH 7, 1% PAA, w/v (Aldrich), 50 ng/mL YO-PRO-1, 1.27 µM EB, EK: 10s @ 5kV; CC: 38 µA (13kV)	UV	15 min 20 min	10000 10000
[142]	45174 (hair)	WatersB-CX, 50µm(50) x 100 µm i.d. Bond silica coated with PAA, PAA 20 mM Na-phosphate, pH 7, 1% PAA, w/v (Aldrich), 50 ng/mL YO-PRO-1, 1.27 µM EB, EK: 10s @ 5kV; CC: 38 µA (13kV)	UV	15 min 20 min	10000 10000

123 papers examined and distilled to essential results
More than 100 hours spent studying and entering this information
(687 articles cited in my dissertation)

Parameters Tracked

Conditions: Capillary, Buffer, Additives, Voltage	Det
P/ACE 2050 CE, 57cm(50) x 100 µm i.d. DB-17 (0.1µm), 25 °C 100mM Tris-borate, 0.1mM EDTA pH 8.7 w/CsOH, 1% HEC (Aldrich), 50 ng/mL YO-PRO-1, 1.27 µM EB; EK: 10s @ 5kV; CC: 38 µA (13kV)	LIF 488-520

- Instrument: Length of capillary (length to detector)
- Run temperature: Internal diameter (i.d.) of capillary
- Run buffer: Capillary inner coating
- Polymer concentration: Intercalating dye for fluorescence detection
- Injection time and voltage: Separation voltage

Further Thoughts

- Pay attention to details
- Find out how you learn and then tailor your experiences to fit your style of learning
 - Example of how I memorize things

The Little Things Matter

“By small and simple things, great things are brought to pass”

- Be prepared to take notes at all times
 - Always carry a pen (e.g., in your back pocket) and paper to write down ideas
 - I am an Eagle scout and still trying to “Be Prepared”
- Shorten your commute so you can spend more effective time at work and at home
 - Live as close to work as possible