

# THE GOLD NUGGET

June 2023

## It's that time of year again for ANNUAL GPR membership renewal.

### **The Prez Sez!** By **Bobby Manning**



Greetings to all. May is here and we have had a lot of rain and the water is pretty high so let's all be safe out there! I'm working a lot in Alma now so my time is short. I'm also doing therapy for my back and I need your help on what you all think you like to do, not just prospecting? So please help me out with some ideas! Last month, I started an auction on the things donated by an old member. We need to get around 500.00 to help pay for the hiccup we had with the copyright issue. That will finally be all over at the end of this month. I will be bringing in a blue bowl, a sluice box, a Gold Cube, a couple of shovels and a Black box with lid. So bring your money. What we don't sell in house, we will put on line or in the store. We will watch the movie that we started a couple months ago when I had so much trouble getting it to play. The movie is (The Klondike Gold Rush) so sorry that I don't have much to say this month. The river is running high so be safe if you are around it. I can tell you it is VERY COLD....brrrr...! I know from working in it. Smile and Be Happy and I Will see you in June with My SMILE! Keep the Yellow Gold UP in Your Pan! ! Contact me at 303-420- 8830 or at [bobby.manning13@me.Com](mailto:bobby.manning13@me.Com) .

### **Vice President's Corner!** By **Mike Stevens**



Mother Nature didn't want to give up very easily with the rain a few weeks ago. It rained consistently for three days and we had flooding in our basement. Lots of items got wet, but luckily not much was damaged. It sure kept us busy moving things around, drying up the water, and running fans 24/7. All that rain made the rivers rage, so I'm glad our first outing happened before that huge rain event. With all that said, we had a good time on our first outing. It was a part of Clear Creek that I hadn't been to before. I enjoyed sitting and talking and running my sluice box. I did get to see a gold cube being run, and that was one of the things that I really wanted to see in operation. Also, there was a trommel with a gold cube underneath that dirt ran through, and that was great to see as well. The gold was not all that great, I only had a few specs, but I heard about others who had a few more specs than I did.

Despite the poor gold recovery, it was a great day to be out enjoying the sun, talking, prospecting and seeing a different part of the creek with my fellow club members. I'm really looking forward to our future outings. Golden Smiles for All!

### **From the Treasurer/Secretary Ledger by Joe Kafka**



Pretty well settled into my new digs, but still lots of little stuff to do. The Club remains in the black and members may request to see the financial report at any time which I have at my table in the back whenever you wish to see it. Hope to see you all at the next meeting in June when we will be giving away more gold nuggets, the largest of which may be close to 2 grams....!! Don't forget to buy your 'Special nugget' tickets and your .50/50 tickets' as well. See you all at our next meeting!

### **Board Meeting Minutes from May 2023**

X	Bobby Manning	X	Andy Doll	X	Robert Ahr		Joe Johnson
X	Mike Stevens	X	Joe Kafka	X	Kevin Singel		
	Mike Hurtado	X	Gordon Smith	X	Roger Schlenger		

The meeting was called to order by President Manning at: 6:10 p.m. with a quorum being present.

### **QUESTION OF THE MONTH**

How many carats are required to be called 'solid gold'???



## Gold Prospectors of the Rockies Page 2

First Order of Business was an update on the copyright infringement accusation. Former president J.J. Long had talked with an attorney that wanted \$2500 to assist the club in fending off this accusation. President Manning contacted Higbee & Associates directly and negotiated a \$500 settlement which he paid out of his pocket because this all occurred between meetings and the board was not convened to discuss. Copies of documentation regarding the settlement being accepted to clear the issue with Higbee were given to each board member. President Manning said he would be satisfied being reimbursed by bidding on items donated to the club and if winning the bids, would obtain the item(s) without having to pay the club for them. That way there would be no cash outlay of club funds. No objections were voiced by the board members, although no formal vote was taken to approve this action.

Next a discussion took place on club outings as club member John Johnston was in the meeting in order to present information regarding the Adams Mystery Playhouse. A listing of dates and prices for "Murder on Pirate Island" was delivered to the board for consideration and potential presentation to the membership. Tickets are Non-refundable. This was being considered as something different for a club outing that might encourage more participation. Additionally, a club outing to Cache Creek was brought up and possible dates were discussed. Board member Kevin Singel suggested planning an outing sooner rather than later as the water level is better plus other reasons. June 17 & 18<sup>th</sup> dates were floated as well as July 1 & 2. If the July dates were agreed upon, Kevin volunteered to deliver a talk on Cache Creek at the June meeting.

Moving back to the normal agenda, the last meeting's minutes were read and voted on. Mike Stevens moved the minutes be accepted. Robert Ahr seconded and the vote was unanimous.

The treasurer's report was discussed and a motion was made by Mike Stevens to accept. It was seconded by Roger Schlenger and the motion carried unanimously.

Next was a discussion about the cost of membership going up to \$300 annually with Public Lands for the People (PLP). It was decided that due to membership numbers not growing very quickly and the cost of gold being historically high, that club funds would be better spent elsewhere.

President Manning mentioned the lady we've purchased gold for the club from in the past is retiring and he is planning a trip to AZ to purchase from her before her inventory is depleted. No board action was taken at this meeting in regard to this purchase.

New Business: Each board member was given a couple of pages of the membership roster with highlighted names of members that have not renewed. The board members were tasked with calling the names on the list to politely ask if these folks would like to renew and come back to the meetings. Each board member received approximately the same number of names to reach out to and were asked to accomplish this task by the next meeting.

The meeting was adjourned at 6:55 p.m.

### 2023 GPR Board of

#### Directors Members

##### President

Bobby Manning

##### Vice President

Mike Stevens

##### Secretary/Treasurer

Joe Kafka

##### 2 Year Board Members

Robert Ahr (2024)

Andy Doll (2024)

Gordon Smith (2024)

##### 1 Year Board Members

Kevin Singel

Roger Schlenger

Vacant

Vacant

##### Past President

Joe Johnston

## General Meeting Minutes from May 2023

1. **Meeting** was opened at 7:13pm by **Pres. Manning** with the Pledge of Allegiance.
2. **Pres. Manning** then announced the evening Program which was a presentation by Chris Davis of the Eureka Treasure Hunters. Chris has been detecting for more than 40 years and regularly goes to England searching for treasure. It was a very entertaining presentation.
3. **Pres. Manning** then gave the Metals Report: **Gold** 1943.00 **Silver** 23.90 **Platinum** 1041.00 **Palladium** 1398.00 **Rhodium** 7900.00.
4. **Web hits** for last month was 163841 / 222.
5. **Treasurer Joe Kafka** reports that the Club remains in the black. Report is available for review for anyone who wishes to see it. We also have a 'Special Nugget' so be sure to buy lots of tickets. It is a real nice specimen.
6. **Robert Ahr and Shelly Zornes** from the Membership Table reported that we had 48 members in attendance. There were no Guests Present and no new members joined up tonight. The total meeting attendance was 48. Great turnout again tonight!!



### Gold Prospectors of the Rockies Page 3

7. **Pres. Manning** read the ‘Question of the Month’, which was “A ‘**London Good Delivery Boy**’, the standard unit of traded gold, weighs exactly how much in troy ounces???” The winners will receive an extra ticket to the gold nugget drawings later during the evening program.
8. **Pres. Manning** advised that there was time to enter items at the break for the ‘**Finds of the Month**’ table and that the monthly winners from tonight will need to be saved for the Finds of the Year competition in November, 2023. A reminder to all that their gold submissions need to be weighed dry and only one submission per person per category. Be sure to fill out the entry cards completely. Only finds found within the last 30 days may be submitted.
9. **Bill Chapman** announced the ‘**Cache Clue**’ # 6.
10. **Pres. Manning** advised that the Club Store had numerous items for sale. Be sure to drop by at the break and support your Club by buying something. We have some more of our gold bags as of tonight so be sure to buy your bags. We received a large amount of items from Wayne Schumacher who donated them to the Club that will make their way into the Club store soon.
11. **Pres. Manning** informed the membership that there were several Outings discussed to include a trip to Cache Creek coming soon. Announcements will also be made with the Newsletter postings.
12. Additional items discussed included: The Club has settled the copyright issue for \$500.00. Bob Ahr announced that the May ‘Pirate’s MD Hunt’ was a success. Look in the Newsletter for more on that along with photos. There was a reminder to be sure to vote on the Finds of the Month and to answer the Question of the Month during the break.
13. **Pres. Manning** announced the break at 8:13 pm. Meeting was called back to order at 8:35 pm.
14. **Pres. Manning** announced the winners of the ‘**Question of the Month**’. The answer was, “... **400 troy ounces...**! There were 26 winners who received their extra drawing ticket for the gold drawing.
15. **Pres. Manning** announced the winners for the ‘**Finds of the Month**’. Those were:
  - **Best Coin** – There was no find submitted for this category in March.
  - **Best Jewelry** – There was no find submitted for this category in March.
  - **Best Mineral** – **Angie Yen** with a quartz specimen she found while rock hounding along the South Platte River.
  - **Best Artifact** – **John Olson** with an old .metal toy soldier he found while metal detecting west of Denver.
  - **Best Bottle** – There was no find submitted for this category in March.
  - **Most Raw Gold** – **Joe Fortunato** with .5 grams of gold nuggets he found metal detecting in Nevada.
  - **Largest Raw Gold** – There was no find submitted for this category in March.
16. **Pres. Manning** concluded the evening with drawings for the numerous door prizes donated by the **GPR, JJ Long and Pres. Manning**, followed by the drawings for the gold nuggets.
17. **Pres. Manning** then conducted the **50/50 drawing** which was won by Pres. Manning, who gifted \$40 back to the Club and \$5 to little Joey Dehnlow. Well done, Mr. President!!
18. **Pres. Manning** also wants to remind that holders of drawing tickets for the regular gold drawings who did not win and want to redeem those tickets may present them at the end of the Meeting and they will be reimbursed at .01 cents on the dollar, or they shall be considered to have been donated back to the Club. Those assisting in the drawings were **Joe Kafka and Chuck Cown**.
19. **Pres. Manning** reminds the members that sometimes during the meetings, The President’s time is overwhelmingly taken up by the many who wish to speak to him and he apologizes if anyone ever feels like he is unavailable. It is not his intent to be inaccessible and he encourages anyone with questions to contact him by e-mail or phone outside the meetings at any time. His e-mail and phone number are on the web site.
20. **Pres. Manning** thanked **Greg and Nancy Knerl** and all those who contributed to the Refreshment Table. Each member is encouraged to chip in and add to the spread each month. Don’t forget the ‘tip jar’ also, which helps to defray costs. This really helps the folks who run the table and those who volunteer up front each month. The Club appreciates the efforts that each and every one of you to make the refreshment table enjoyable.
21. **The June Meeting Program is to be determined** Having nothing further at this time, remember to prospect safely.
22. **Meeting was adjourned at 9:03 pm.**



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### A Miner's Laugh

An old miner was watching his wife who was looking at herself in the mirror. Since her birthday was not far off, he asked her what she would like as a gift. She replied, "I would like to be 8 again." So on the morning of her birthday, he arose early and made her a nice bowl of coco pops, and then took her to the Adventure Theme Park. They rode every crazy ride in the place, and five hours later, they staggered out and he took her across the street to the McDonalds where he got her a Happy Meal with all the trimmings and toy prize. Then it was off to a movie with the popcorn, her favorite m&m candy and drinks. They finally staggered home, completely exhausted and fell into bed. The old boy leaned over and asked his wife, "Well dear, what was it like being eight again?" Her eyes shot open and she looked at him with an angry look in her eyes and replied, "You blamed idiot, I meant my dress size..!"

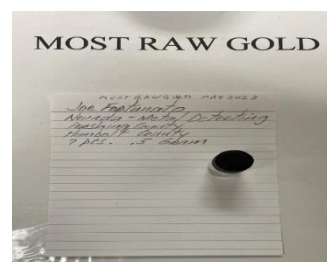
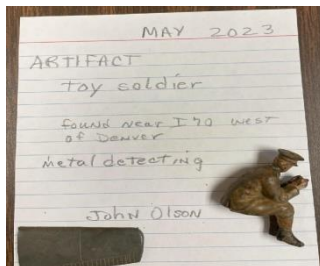
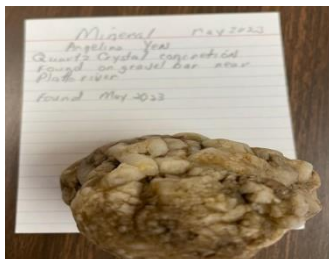


Now the moral to this sad story is that even when a man is listening, he is dang sure gonna get it wrong..!!

*(Taken from the internet and revised just for all us 'old miners')*

### The Finds of the Month May 2023:

- **Best Coin** – There was no find submitted for this category in March.
- **Best Jewelry** – There was no find submitted for this category in March
- **Best Mineral** – **Angie Yen** with a Quartz chunk she found on the bank of the South Platte River.
- **Best Artifact** – **John Olson** with a metal toy soldier he found while metal detecting west of Denver.
- **Best Bottle** – There was no find submitted for this category in March
- **Most Raw Gold** – **Joe Fortunato** with .5 grams of gold nuggets he found metal detecting in Nevada..
- **Largest Raw Gold** – There was no find submitted for this category in March.



Remember that all gold must be dried and weighed. All monthly winners need save their entries for the November meeting when the Finds of the Month will be judged for the Finds of the Year. So be sure and save them.

### April Prospecting Outing

by Robert Ahr

We managed to get out on the creek for our first Club prospecting Outing on Saturday 4-29. This time we went to the Broadway Bridge on lower Clear Creek. There were 7 members in all and 3 were using sluice boxes in the river and 3 others of us used the gold cube, one with the punch plate and the other with a trommel on top. The last member was using a Keene mini Hi banker. We all moved a lot of dirt that day and everybody pretty well stayed for about 5 hours. Of course, there was gold found, just how much, we won't know until the meeting and see who shows up with their gold all dried and weighed. The weather was absolutely great for our first time out this year and we had a very easy access and walk down to the creek. Photos by Bobby Manning and Robert Ahr.



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### **The Pirate's May Hunt** by Robert 'The Pirate' Ahr

Greetings ladies and gentlemen, the Pirate's hunt started with breakfast at McCoy's restaurant. We made a decision to hunt Paco Sanchez Park and proceeded from the restaurant with a light drizzle on our shoulders. We made our way down to the Park and arrived just as the drizzle stopped and the next 3.5 hours were great. There were 7 people for breakfast but only 5 went on the hunt. We had two metal detecting gurus join us on the hunt and they had a great day (Joe Fortunato and Bob Holmberg.) and they helped the other 3 of us on target searching and probing for the targets. So here's how the day tallied up: 1. Bob H. with \$6.00 in coins, one pocket knife, a carwash token and a handle. 2. Joe F. with \$4.65 in coins, 3 keys and 1 fishing weight. 3. Leslie Schomer with .25 cents, a wood screw and a flat washer. 4. Robert A. with 13 cents. 5. Shellie Z. with enjoying the day. Many thanks to all and we will see you all next month for more detecting at a new location. *Photos by Bob Ahr.*



### **Aurora Water Festival Panning Demo**

On May 18, the Club once again attended the Aurora Water Festival which was held at the Aurora Community College. Numerous Aurora and Arapahoe County Schools sent bus-loads of 5<sup>th</sup> and 6<sup>th</sup> grade students to the festival to learn about the various uses of water. And of course, as it is every year, the gold panning booth is a major hit with the kids. The hosts provided our volunteers with a free lunch and a good time was had by all. We managed to get the event completed before the afternoon rain struck and we had to tear down in the rain. Thank goodness for a covering canopy. And we offer our many thanks to our volunteers who helped to make this Demo another success. Thanks to Jack Meineke, Gordon and Yvonne Smith, Angela Yen, Carl Smith, Roger Schlenger and Joe Johnston. *Photos by Gordon Smith.*





## How to Test the Purity of Gold Nuggets & Placer Gold Dust

January 24, 2023

WRITTEN BY MONICA of Bering Sea Paydirt

Have you ever wondered how pure your gold nugget is? How about how pure your placer gold dust is? We know that gold found in nature isn't 100% pure. But the good news is testing the purity of your gold can be cheap, easy and fun. And you can do it right from your home! So in this guide, we're going to give you four ways you can test the purity of your gold. Two of these methods can be done at home, and two can be done with the help of a professional in the jewelry or gold refining industry.

Gold nuggets and gold dust need to be treated a little differently. The goal of testing a gold nugget is to not melt it in the process, because it's actually more valuable in its original form than melted down, even if it has a "low" purity. But fine gold dust doesn't have the same premium value as nuggets, and if you want the most accurate purity test then melting it is a good option.

### Specific Gravity Approximation for Gold Nuggets

Testing gold purity by specific gravity principles is one of the oldest known methods of assay. Archimedes of Syracuse was a famous Greek mathematician, engineer, inventor, astronomer, and councilor of kings who was born in 287 B.C.E. His most famous story goes like this. The King of Sicily, King Hiero II, had given a goldsmith a block of gold from which to make a crown. When Hiero got the crown back he suspected the goldsmith mixed in some silver and kept some gold for himself. He asked Archimedes if he could prove it. But there was a catch: Archimedes could not damage the crown in any way. Archimedes, his brilliant 22-year-old advisor, was given the task of determining the purity of the gold crown. He stumbled upon the answer sitting in a full bathtub one day when he realized the volume of water displaced by his body overflowed out of the tub and onto the floor. He famously jumped out of the tub, yelling "Eureka!" which means "I found it!" in Greek. He knew he would need to compare the density of the crown to the density of pure gold. If the crown was less dense than pure gold, but the same volume, it would indicate the presence of silver or other metals. The problem is – how do you measure the "volume" or "mass" of an irregularly shaped object like a crown or, say, a gold nugget? The solution was to give the crown a bath, and measure the volume of water displaced. He could then measure the density of the volume of that crown versus the density of pure gold. Thus Archimedes' Principle was born. Specific Gravity uses Archimedes' Principle to find the ratio of the density of an object to a fluid (usually water). If you know the specific gravity of pure gold, and the specific gravity of a gold nugget, then you can approximate the purity of that gold nugget, give or take a few % depending on what other kinds of minerals or metals are present. This is the cheapest and fastest way to determine the purity of your gold nuggets at home without melting them down. It also works for solid gold jewelry without gemstones. It's also the least-damaging method on this list to approximate the fineness, or purity, of a gold object. Thus it's the most popular way to measure gold purity in items with great artistic or historical value that cannot be damaged in any way, even for micro-analysis. Unfortunately, it's not always incredibly accurate, especially when the gold content is low. According to this study, for gold nuggets that were 87%+ pure, multiple specific gravity tests determined gold purities that were off by 3-4% in either direction. For gold that was less-pure, that margin of error could be even higher. That's why it's called an "approximation." This also doesn't work for fine placer gold dust, or flour gold, as there isn't a large-enough piece of gold to tie a string to and submerge in water. All that said, it's still a great place to start if you want to get a ballpark of how pure your gold nugget is. Here's what you'll need: some thin thread, fishing wire or dental floss to tie around the object you want to test, a cup or bowl, distilled water, precise scale, a density chart, and a calculator.

**The first step is to weigh your gold nugget or jewelry on the scale.** The first weight is your "dry weight". Now get your glass and fill it with enough distilled water to fully submerge your nugget without it touching the sides or the bottom. Put that on your scale and zero it out. You then tie your thread around the nugget and dip it into the water completely, careful not to touch the sides or the bottom. Shake it a little to get rid of any air bubbles that might be in the tiny crevices of your gold nugget. Wait for the scale to settle on the weight. In the example video the weight of the nugget submerged in water is .32g, that's your "wet weight". Now you have your nugget weight of 4.53 grams (dry weight) and the weight of the water after gold displacement of .32g (wet weight). It's time for a little math. Divide your nugget weight by the weight of the water, in this case  $4.53/.32 = 14.15625$ . Then check the density table, it shows that it's 14k gold. "Eureka!" Now you have a good approximation of the purity of your gold nugget!



## Gold Prospectors of the Rockies Page 7

### Gold Acid Testing

Checking your gold purity with the acid test is a relatively easy and inexpensive way to test your gold. There are numerous kits available on Amazon like this Acid Testing Kit. These kits come with different acid strengths to test 10k, 14k, 18k and 22k gold along with additional acids to test silver and platinum and a testing stone/tile. In short, you scratch your gold on a dark slate and use acids to see if it dissolves. The stronger the acid required to dissolve your gold, the higher the purity. It's cheap and simple, but it's a bit of a process and, like the specific gravity test, isn't precise.

It will also do a little bit of damage to your nugget during the scratching process. But most prospectors find it's negligible. To begin the process you will need: a testing stone, acid, and a gold nugget. Place the testing stone on a flat surface, such as a tabletop or countertop. Then, take your gold item and scratch it hard on the stone to make a solid line a couple inches long. Next, take your acid testing kit and apply a drop of acid, starting at the acid for the lowest karat. Once the acid has been applied look to see if the gold line is still there after about 10 seconds. If it is, try the next level up of acid on the line of gold to see if it stays. If your line of gold has disappeared or gotten really faint then its purity is less than that acid you used. For example if I was testing a gold nugget I found panning in one of the **19 Places to Pan for Gold in Alaska** I'd start with the 10k acid first. If I could still see the line I'd test it with the 14k acid solution and so on until the line disappeared, telling me the approximate purity of my gold nugget.

You can use this method with placer gold dust, too. You just might have to get creative to figure out how to smear a small gold flake on your testing stone. Acid testing is a quick, easy, and cost-effective way to determine the purity of gold. Like Specific Gravity, it's not the most accurate way to determine the purity of your gold but it will get you in the ballpark within a few karats for just a small investment and minimal damage to your gold nugget.

### X-Ray Fluorescence Gold Assaying (XRF Gold Assay): The Jeweler's Test

XRF stands for X-ray fluorescence. It's a great non-destructive way to find out how pure your gold is.

Unfortunately, these machines cost thousands of dollars so they're usually too expensive for the average recreational gold miner. But most jewelers and precious metal dealers have one and can help you quickly check the purity of your gold nugget. The XRF process starts by shining X-rays on the gold. When the X-rays hit the gold, they make the atoms inside give off their own light, called secondary X-rays. These secondary X-rays are different for each type of element, like gold or silver. A special machine then collects these X-rays and sends them to a computer. The computer looks at the different X-rays and figures out what elements are in the gold. XRF is a fast and accurate way to check gold content in a nugget. It will also check levels of other metals like silver and copper without destroying or damaging your nugget. However, XRF is not perfect. It might not be able to find very small amounts of other elements in gold. And other heavy elements can sometimes make the XRF results inaccurate.

Overall, XRF is a good way to check how pure gold is. It is fast, accurate, and can check for many elements at the same time without having to destroy your nugget or melt it down. You just need to find a jeweler or refiner willing to help you.

### Gold Fire Assay: The Most Accurate Gold Purity Test

Fire assay is a way to figure out how pure gold is by using fire. This is an old method that has been used for centuries to check the purity of gold and the most accurate by far. The process starts by taking a small sample of the gold and mixing it with other substances called fluxes. These fluxes help to melt the gold and make it easier to separate the pure gold from any impurities. The mixture is then put into a small clay cup called a crucible. The crucible is placed into a very hot furnace. The heat from the furnace melts the gold and the fluxes, and the impurities are left behind. The melted gold is then poured into a mold to make a small bar called a button. The button is then cooled and taken out of the mold. The impurities that were left behind in the crucible are called slag. The slag is removed and the button is weighed. The weight of the button is used to figure out how much pure gold is in the sample. The button is then tested chemically to confirm the presence of gold and other precious metals, like silver. The assayer then puts together a report for you show you the breakdown of you gold and any other metals in it. Fire assay is a very accurate way to check the purity of gold, but it is also a time-consuming and labor-intensive process. It can take almost a full day to complete the whole process. Thus, it's going to cost you a fee to send a sample to a refiner to get fire assayed. I've seen quotes for \$25-\$30 after a quick Google search. Or, if you send enough gold to a refiner with the intention of selling it, they'll assay it for free but take a small % of the gold. We've seen 1.5% most commonly. This is a great way to test the purity of placer gold dust, as you can send in a small or large sample depending on what you want to melt down. However, it's not a good option for gold nuggets, because you don't want to melt them down or damage them and decrease the value.

Gold purity is an interesting subject, but the real fun is in the *finding*. So go out there and find your gold..!!!



## **Precious Medicine: Gold in Tiny Amounts Can be a Cure All**

By: Robin Fearon

Precious metals like silver, gold, and platinum are all used in medicine to aid treatments as diverse as wound healing and cancer therapies.

Gold in particular is used for everything from imaging the human body to improving the immune system. Thankfully, its rarity is not a problem as tiny amounts make all the difference.

### **Tiny Particles**

Gold nanoparticles, measured in billionths of a meter and thousands of times smaller than the width of a human hair, are invaluable for medical use because of the way they react to light. Nanoparticles suspended in liquids are widely used (known as colloidal gold) and their color, from deep red to pale blue, is a visual guide to their relative size.

Their light reflecting and absorbing qualities make them suitable for both electron microscopy, to examine the structure of microorganisms and cells, and photodynamic therapy, where the particles penetrate cancer cells and are then heated using light to destroy tumors.

Nanoparticles also fight infection. Specially engineered porous gold nanodisks made at the University of Houston can be heated using a laser to kill bacteria with a thermal shock. Medical instruments such as catheters could in future be coated with the particles and laser treatment administered at the patient's bedside.

Of course, any tiny particle has the potential to cause harm to our vital organs or cells, especially once they are coated with chemical agents. Cell penetration is achieved using special polymer coatings, but to keep the cells healthy a team of researchers has identified several non-toxic compounds that work to allow entry and then seal the cell wall afterwards. Different coatings have been developed to target only specific types of cells to harmlessly deliver drugs, vaccines, or genes for treatment.

### **Forever Young**

Illnesses associated with ageing are under the microscope too. Scientists are using gold nanoparticles to see the knot-like structures in the brain that cause Alzheimer's and other neurodegenerative diseases. By labelling these structures—called amyloid fibrils—with gold they can see the knots more clearly and identify their weak spots for treatment.

Another global health problem shows promise for gold use in medicine. Tropical disease malaria, transmitted by mosquitoes, infected 219 million people in 2017 and killed 435,000. Nanoparticles used in rapid diagnostic tests are cheap to use, can give results in 15 minutes, and help doctors target treatment for malaria where it is most needed.

### **Breakthroughs for Cancer Research**

But some of the most exciting breakthroughs for gold nanoparticles are in cancer diagnosis and treatment. Cancer DNA has a special 3D structure that has an affinity for gold, according to one study, and nanoparticles change color when that DNA is present. Simple, fast tests could detect cancer in 10 minutes.

The University of Central Florida has created a one dollar test for prostate cancer that could be given in a doctor's surgery. Another group at the University of Maryland, Baltimore County is using chemicals to make tumors produce their own gold nanoparticles, which could then be used to image or destroy them.



### **Immunity Now**

Immunotherapists are also harnessing the special properties of spherical nanoparticles to deliver a boost to the body's immune system. Polymer-coated spheres of gold interact with B lymphocyte immune cells and can deliver drugs or vaccine to where it is most needed. In this way they hope to treat hard-to-reach brain tumors.

Going forward there is exciting potential for nanoparticles to help combat HIV and blood diseases. Medics use the gene editing tool CRISPR to deliver new genetic information to cells, but current methods can damage or even kill cells. Gold nanoparticles mounted with CRISPR can quickly cross the cell membrane into the nucleus to edit gene






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For information to publish your "Ad" in The Gold Nugget, please contact the Editor. **COPY DEADLINE** is due to the editor by the 25th of the month for publication in the following months' issue of the Newsletter.

**Contact the GPR President**

*(Layout Design Subject To Additional Cost)*



**Coming Announcements and Special Events for July 2023**

**(WMMI - Western Museum of Mining & Industry, 225 North Gate Blvd. Colorado Springs, CO 80921**  
[\(https://www.wmmi.org/\)](https://www.wmmi.org/) (Free to GPR Member with badge)

SUN	MON	TUE	WED	THU	FRI	SAT
						1
2	3	4 <b>Independence Day</b>	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19 <b>GPR Club Meeting</b>	20	21	22
23/30	24/32	25	26	27	28	29